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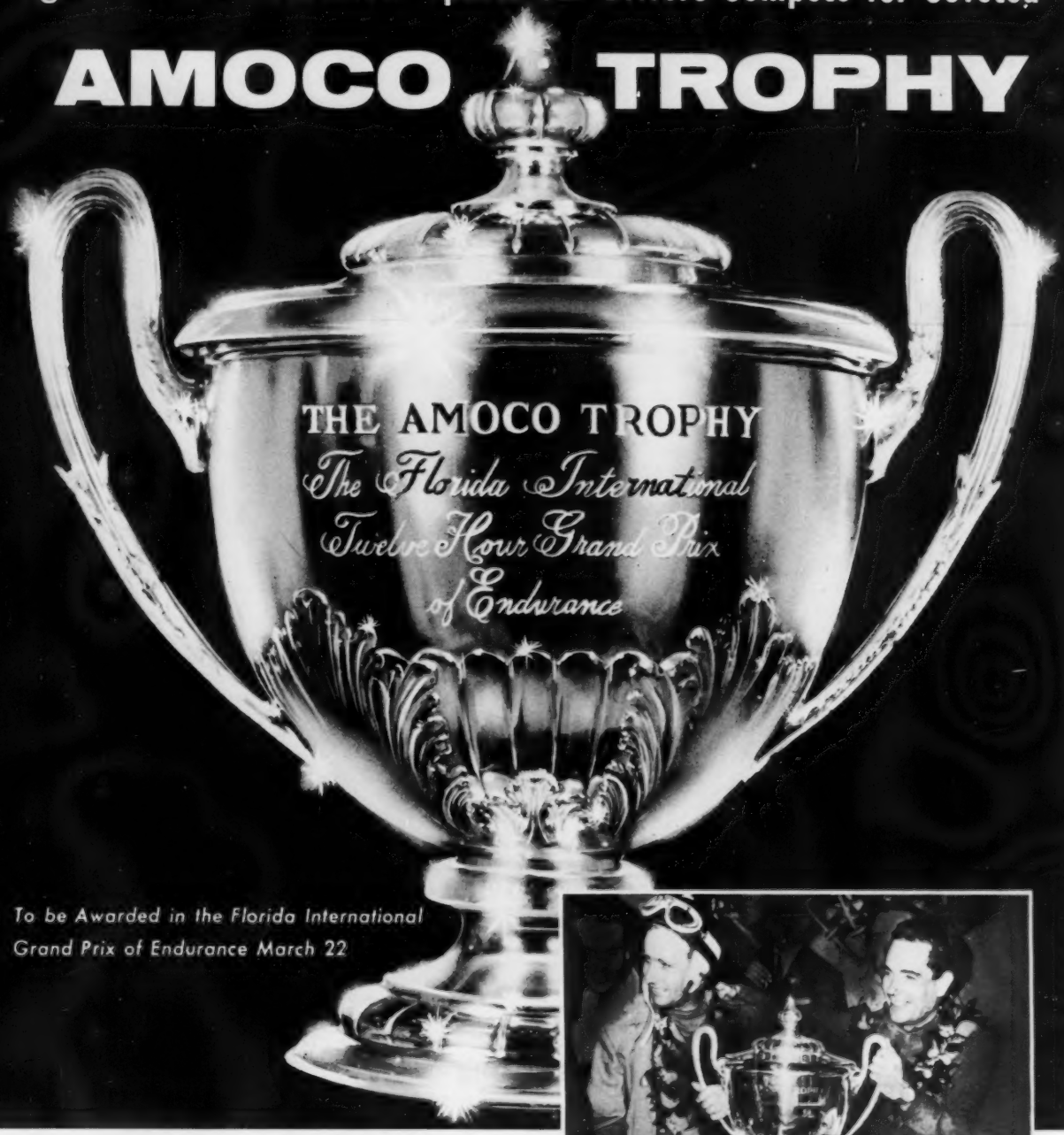

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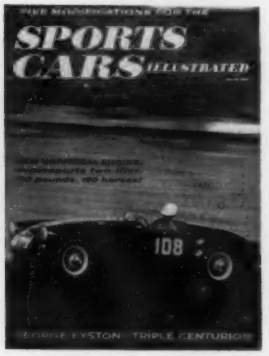
SPORTS CARS ILLUSTRATED

march 1958
no. 9 vol. 3



. The MGA on this month's cover is stock. But if the owner wants to run modified he can after he reads the story on page 22. Ektachrome is by Robert Coogan.

CONTENTS

road tests

Plymouth Fury *19*

Triumph TR3 ..... *30*

Opel Rekord *38*

features

One Horse per Pound ..... Ocee Ritch *16*
and it weighs 180 pounds

George Eyston: Triple Centurion ..... Dennis May *26*
The only living 300-miler

technical

Safety Faster ..... John Christy and Dennis May *22*
Five modifications for the MGA

Vanwall Vindicated ..... Karl Ludvigsen *32*
Tony builds a winner

how to

Pipes for the Porsche ..... John Christy *40*
Installing an Abarth muffler

Body for a Beetle ..... Robert Behme *45*
The Devin-VW—concluded

competition

Nassau 1958 ..... Diana Bartley *42*
Bahamas Speed Week

departments

Very Sincerely Yours *6*

Letters *8*

Technotes *10*

New Products *12*

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very sincerely yours:

ONE OF THE THINGS every editor looks for — in fact hopes for — is reader reaction. We at SCI have had our share and it has been one of the pleasures connected with the magazine. However, some of our presentations have earned more than their fair share of reaction, usually due to mistaken interpretation. Such was the case with an offering entitled "The Big Fast Four" by Ken W. Purdy. Reader interpretation of this article was divided evenly down the middle. One faction patted us heavily about the shoulders while singing patriotic hosannas. The other faction devoted its energies to clouting us in the same area with plaited rawhide while shouting for editorial blood. We were pedestalled as patriots on the one hand, and lynched as traitors on the other.

Neither interpretation was correct.

SCI has never attempted evaluation of one country's product using the product of another as a yardstick — nor will we.

However, we cannot control the interpretations read into our material. The subject of a man's car has always, for some reason yet unexplained, been an emotional one, and reaction to a report is almost always colored by preconceptions made long before. There are no grays — everything is either light or dark.

We have said it in many different ways and now we'll say it again. We are in this business because we genuinely and honestly *like* sports cars. Never will a two-ton automobile approach the lithe grace, the sheer belt and the pin-point perfection of a two-thousand pounder designed by enthusiastic people for other enthusiastic people. Such cars, whether they'll only put 90 miles into an hour or 190 are simply not to be compared with the more mundane product even though they themselves were produced *en masse*.

But — there are those who must needs consider other things. For these things one must go to Detroit. In past years, this was a dreary prospect at best as far as the enthusiast was concerned. Thus it is that when a ray of hope comes through we greet it with enthusiasm. Mr. Purdy's piece was just that, no more. It was intended and so written, not to point a chauvinistic or nationalistic finger at sporting machinery, but to point with pride to the fact that we can learn to build and deliver the sort of goods that takes the gloom out of the future of the man who must carry family and chattels about with him.

Never fear; the day when the little old lady from Pasadena and the hag-ridden button pusher in hack equipment can hold off a sports car, well driven over a winding piece of pike will be long in coming — if ever. As we have pointed out, an indifferently driven piece of sporting *equipe* can be given a rough time indeed by a good man in a super-stock with his foot well and truly into it. But in the normal course of events, the advantage is all the other way.

john christy

OH YEA!

"YA THINK I WANTA PAY FOR SOME MECHANIC'S CADDIE?, NOT ON YOUR LIFE. NO SIRREE . . . NOT THIS BOY. LOOK AT ALL THE CASH I CAN SAVE BY FIXIN' 'ER UP MYSELF."

"HE WENT OUT AND BOUGHT ENOUGH TOOLS TO BUILD THREE LOTUS MARK VII's."

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Clock type, 2" dial, 10-50 lbs. $2.95*

*Including genuine leather pouch

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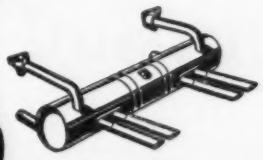
VW and Karmann-Ghia



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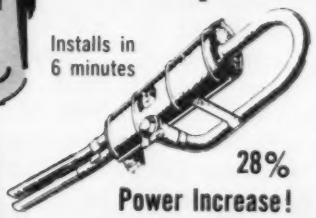

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letters

THE PRINCESS AND THE PEA

Please read the enclosed road test on the Morris Minor . . . then compare it to your recent road test of the same car. You state the riding qualities of the Morris are simply wonderful over rough roads, in fact one of the car's main features. While the consumer-type magazine (which I am inclined to believe) says just the opposite. The ride and shock absorbing qualities of the Morris were, in so many words, miserable, and long distance travel would be very unpleasant. Gentlemen, there is something rotten in Denmark and it smells like Sports Cars Illustrated road tests. You probably won't print this letter as it might start some of your subscribers thinking and putting two and two together. I feel better anyway getting it off my chest.

Jack Walters
Mamaroneck, N. Y.

To someone used to feather-bed characteristics found in many domestic products, the ride handed out by the Morris may have seemed a bit stiff. To those who are used to the average small sedan or the firmer sports cars, the Morris has excellent characteristics. While the road could be felt, there was no, repeat N-O, tendency toward loss of control nor was there any discomfort. Put it this way, Jack; the staff of SCI does not spend its time soft-conditioning the seat of its collective pants on rubber rings. SCI is a magazine reporting on men's automobiles. We call 'em as we see 'em and the Morris has a good ride, feather-fannied opinions to the contrary. —Ed.

TABLE TOP GRAND PRIX

After purchasing a "Table Top Grand Prix", I would like to see a "Miniature Road Racing Club of America" started, and am willing to act as temporary secretary for those in the New York area who would like to participate. All those interested can contact me at 557 DeKalb Ave., Brooklyn, New York.

Earl Beer
Brooklyn, New York

In the December issue of SCI you wrote an article "Table Top Grand Prix". I would like information on where I can get these models and the approximate price. If you can't give this, where can I find out.

Bobby Pitman
Dothan, Alabama

We don't know where the Alabama dealership is located, but our Scalectric dealer is Polk's Hobby Shop, New York City. They may be contacted for any questions pertaining to the table top Grand Prix.—Ed.

AMERICANS UNITE!

I feel that I must point out a few convictions of mine. This is especially aimed at blind Sports Car enthusiasts such as Mr. David McGrath in your December issue.

I must compliment SCI on the objective reporting and lack of bias in treatment of all material. It seems that some people think that if it's foreign, it is above reproach.

I would like to support Mr. Borgeson in blowing this myth apart. My means prevent me from owning a sports car at this time, but I have been an avid enthusiast for over ten years. I have been fortunate enough to have driven a very representative group of cars but as yet am only an aspiring Fangio. This group covers VWs and Renaults to 300SL's and most American iron.

Here at the University of Florida, our club holds many small rallies, gymkhannas and sprint races. I use my car in all of these events although it was never intended to be used in this manner. I have fun, and after all, that is what the sport is all about.

On our little road course, strictly handling and not a power or speed course, in a time lapse of two minutes for three laps, I was second fastest, one tenth of a second slower than a 1500 Speedster. Other cars running included VWs, a Ghia, MGAs, 1500 TF MG, Renaults and Hillmans. The Porsche and I led the rest of the field by five seconds.

I am not a gambling man, but Mr. McGrath, please open your eyes and mind; you might learn something. I will graduate next June and am coming to California. I will be glad to have a go with you on any short twisty course in my car.

Believe it or not (I have witnesses) I'll be willing to see you next summer, Mr. McGrath, in my tired 1952, 4 cyl, 2200 cc, 72 hp. Jeep Station Wagon.

Fred K. Gamble
University of Florida
Gainesville, Fla.

FANGIO USA?

At least two statements in the article on Mr. Sam Hanks in your November '57 issue are wide open to debate.

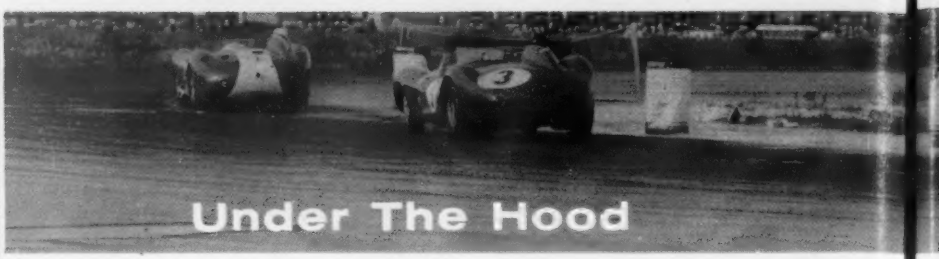
Referring to his win at Indianapolis as the biggest event of any automobile racer's career is pure fiction. I can only conclude that the writer has never heard of Le Mans, Sebring, the Mille Miglia and the now discontinued Mexican Road Race. These, and others too numerous to mention, are far greater tests of man and machine than Indy ever will be.

The writer's vision must have been glued on the North American continent because he goes on to say that Hanks has won practically everything else a man can win in racing. That, of course, is pure rubbish, as anyone with only half an eye on the world picture would agree.

Without trying to take away any of the great credit for his win at Indianapolis, and other wins, he has never won a world's championship or a foreign Grand Prix, to say nothing of the events mentioned above. Fangio's win in this year's German Grand Prix was a far more outstanding performance than any win at Indy ever has been.

J. Howland
San Diego, Cal.

The article was about an American doing American racing—a definite specialty distinctly different from the racing you mention. In his area, Hanks is tops as Fangio is in his.—Ed.



Under The Hood

Next month we'll be back with Technotes, but for this month, here are some observations on Nassau Speed Week and some of the more interesting cars, what was new about them, and in some cases, what sort of problems they ran into.

Nassau and its Speed Week are justly famous for their splendid climate and party atmosphere; what many do not realize is that these attract not only some of the finest drivers in the world but also some of the newest and fastest racing machinery to race over one of the toughest, chassis-bending, tire-scrubbing airport circuits ever found.

The Moss-Levy Aston-Martin is the second of these DBR2/370s to be built, and with the new three-liter limit, probably the last. First run at Silverstone, Salvadori drove this one in the finest race of his career, beating Scott-Brown (Lister-Jaguar) after a nip and tuck battle in which they ended up as joint lap-record holders. Its second race at Nassau was less fortunate. What will become of the two cars now is problematical.

Comparison with the DBR1/300 (SCI, Dec. '57) is interesting, as the earlier, smaller car seems somewhat more advanced. Though using a space frame and a trailing arm front suspension with some R1 parts, the R2's engine, gearbox, and rear suspension are simpler in conception, leading us to think that the R2 is more of a rolling test-bed than a serious racing proposition. The engine is an in-line 6 with seven mains and chain-driven twin cams atop the fourteen stud head. The valves appear to lay at 90° to one another and the single distributor is driven straight off the tail end of the exhaust cam. Three Weber 50DCO3's with an air box lie on the R.H. side. Opposite a pair of three branch manifolds exit the gasses into twin pipes.

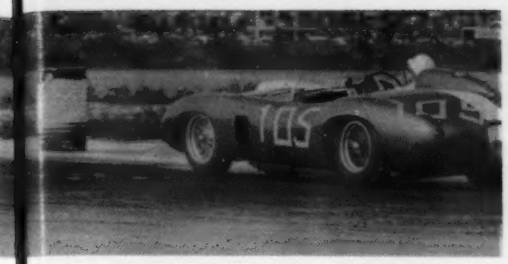
The gearbox, mounted on the bell housing, has five forward speeds; fourth is direct and fifth is an overdrive ratio. The deDion rear axle is like the DB3's, using a sliding block for lateral location instead of the Watts linkage of the R1. Tires are 6.50 x 16 front and 7.00 rear. Reg Parnell figured on Stirling doing the feature on one set, and with a 56 US gallon tank this would have eliminated the mid-race pit stop, providing an interesting thought on "what-might-have-happened", as the R2's lap times were not much slower than the fastest of the opposition.

Scuderia Buell brought several interesting cars along under the management of Hans Tanner. These included Gregory's 4.7 Maserati ("When in doubt, bore it out"), a 3.5 V-12 Ferrari for Joakim Bonnier, and a 2.0 Testa Rossa for Olivier Gendebien. Temple Buell offered the 3.5 to Moss, but then it was pointed out that the deVroom 3.5's gearing enabled it to reach 7200 rpm in fourth down the longest straight while Temple's could only show 6500. This is why Buell, who has entered sports cars for Masten at six major races since last year's Nassau, ended up with *four* leading contenders on the starting line. Rumor has it that he may take over the Maserati racing *equipe* for Formula 1 events. Blue and white Masers would be a pretty sight, wouldn't they?

The two 3.5's are both 290 *Mille Miglias* dating back to the 1956 season. Bonnier's was driven by Phil Hill in that year, winning the G.P. of Sweden, while the Moss mount (the first Ferrari he has ever driven in competition anywhere — an omen of plans for '58 perhaps) is the car in which Castellotti won the '56 Mille Miglia (hence its name). Fitted with dual ignition, the engine is very much like the 250 G.T. Europa with single cams per bank and three twin-choke Webers. The Saturday night clue to which car Stirling would drive—rumored to be Bonnier's—was the sight of Luigi Chinetti himself changing the centrally located accelerator pedal on deVroom's car to the right, a special point with Moss. The job was accomplished between one and six-thirty A.M.!

Phil Hill brought along Tilp's 4.1 Ferrari with which he and Peter Collins won at Caracas. Phil describes it as a "cultured" 3.8 V-12, which is another way of admitting that someone's enlarged it. Like the 3.8, it's got three Solex quads and two cams per head. Two distributors, bevel-driven at the rear of each intake cam, spark the twin-plug ignition system.

Its deDion axle, sprung by a high transverse leaf spring, is located by a sliding



block and pairs of trailing radius rods. The combined gearbox-differential has a very complicated casing, the forward gearbox portion splitting longitudinally on the countershaft centerline, while the rear breaks horizontally to permit removal of the ring gear. An integral oil pump is fitted in the nose, just behind the splined 2° U-joint. The shifting box is on the left side near the front. The whole unit is very complex (so is its installation), with the unhappy result that it must be entirely removed from the car to change ratios. The big Masers have a drop gear set just behind the clutch which makes such jobs much simpler; although in the case of Gregory's 4.7, a series of changes at the past few races had driven them, even with their extensive selection of gears, up a numerical blind alley that required gear swapping through the entire drive train.

Ferrari drivers usually refer to gear ratio set-ups by the speed reached in top gear at 7000 rpm. At Caracas, 170 gears were used in the 4.1. Preparatory to Nassau, 155 gears were installed, but after Thursday's practice, 142 cogs were installed.

The 1500 class was dominated by Porsche, as usual, but interesting threats were present in the form of one-each Cooper and Lotus with the twin-cam 1500 cc Climax engines whose cylinder heads are from the 2½ liter V-8 that Coventry Climax displayed at Earls Court several years ago. Reventlow's Cooper had two twin-choke Webers while Jim Hall's Lotus carried the new twin-choke S.U. carbs. The latter seemed to be giving a bit of trouble by loading up at low speeds. This Lotus uses a twin-plate clutch and the "BMC" series (MGA, etc.) gearbox rather than the smaller "A" series units of the 1100 cc. cars. The upper rear radius rods are altered and, the engine being dry sump, there is an oil tank in the right rear corner, balancing the weight of the battery. Like the Elite, the cowl carries two fuel tanks and the i.f.s. is right off the F-2 car. So are the cast alloy wheels. Ignition problems put it out of Sunday's 100-miler.

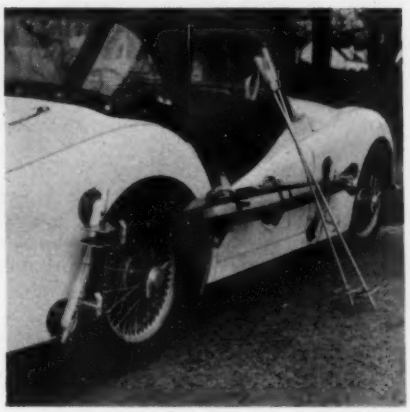
Johnny von Neuman appeared with his trusty 2.5 Testa Rossa and a fascinating new 3.0 V-12 based on the T.R. and the 250 G.T. It looks to be the factory's team sports-racing car for 1958, but more about that next month when we preview Sebring, our number one sports car race.

Stephen F. Wilder

what's new?

SPORTS CAR SKI RACK

In answer to many, many phone calls and letters from readers, SCI has located a ski rack for soft-top sports cars. Trade named "Mon-ez", it attaches to any available flat surfaces by four suction cups. No drilling or fitting is required. The rack removes easily when you want it to, and is designed for service on a wide range of sports cars.



FLAPS UP

No longer any need to get into a flap about your flap. Now you can flip your flap and it will stay flat. The secret is FLAP STAY a new heavily chrome plated spring steel device that can be installed without drilling holes, and can be operated from inside or out. From Accessory Engineering of California, P.O. Box 415, Manhattan Beach, Calif.

Flap Stays sells for $3.95 a pair.

The 190 SL: EXCELLENCE ON ROAD AND RALLY

The Mercedes-Benz 190 SL was designed fundamentally for driver and passenger pleasure. As a sports car, it is a high performance machine with particular emphasis placed on road characteristics. Four-wheel independent suspension utilizing a low pivot point, single-joint rear swing axle, large transverse cooling fins on the brake drums, and extremely precise recirculating ball steering with a pitman arm of tremendous strength, combine to endow the 190 SL with surprising potency on tortuous roads.

What else does the 190 SL offer? You will agree that you can virtually count the number of marques in the world, on your fingers, that provide workmanship of this calibre and, for a sports car, appointments of this degree of luxury. Taut leather, roll-up windows, a weather-proof top and faultless fittings are a pleasure in themselves. However, when you get them in a car that is both tractable, yet can be safely driven near the limit of adhesion, you have fun to the *nth* degree. And that's what the Mercedes-Benz 190 SL is for.

Mercedes-Benz motor cars are distributed exclusively in the U.S. by the Studebaker-Packard Corporation and sold and serviced through selected dealers franchised by Studebaker-Packard.

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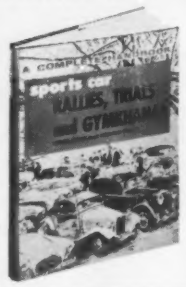

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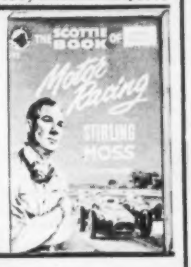

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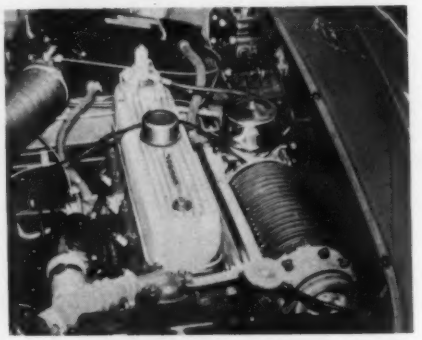

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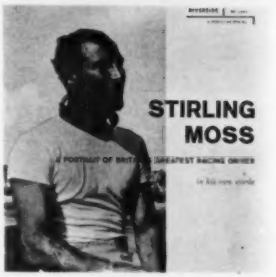

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ONE HORSE PER POUND

Supersports Two-Liter, 180 pounds, 180 horses!

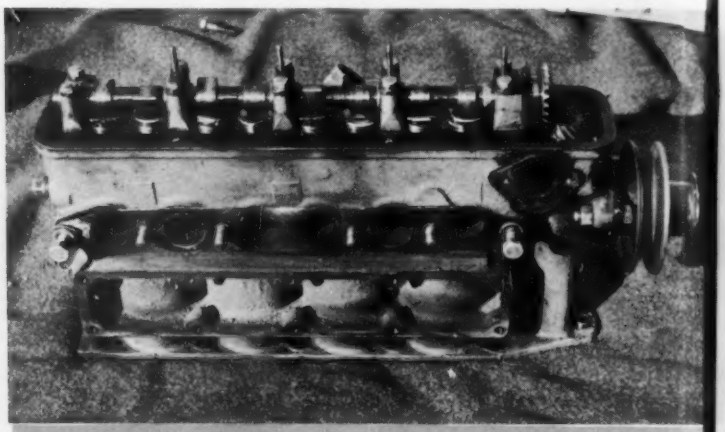
by Ocee Ritch

ONE of the biggest thrills that comes to the amateur mechanic is undoubtedly when he fires up an engine which he has completely disassembled and put back together. He knows, of course, that he has put all the parts in properly and done everything he can to reconstruct the manufacturer's specification and that there is no reason for the mill not to run; however, when the engine comes to life there is a feeling of satisfaction (and relief). It is completely unjustified, but it is also almost beyond description.

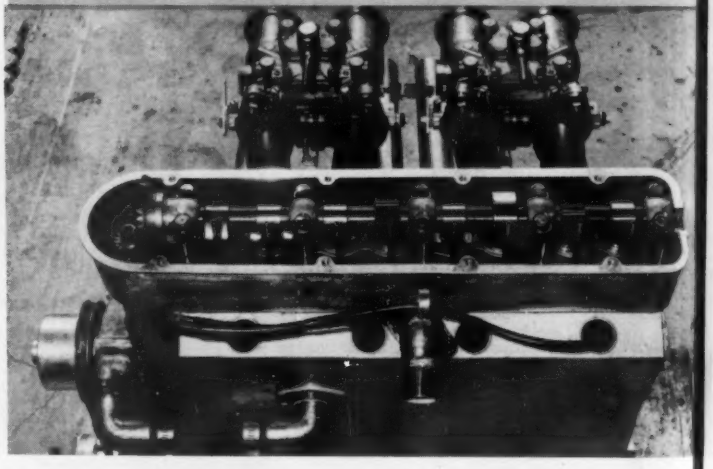
Imagine, if you will, how this feeling would be magnified if the engine were of your own design . . . one on which you had labored for the best part of two years and which represented an investment of thousands of dollars. Suppose, in addition, that the powerplant were one of rather radical construction and, in effect, culminated a 20 year struggle to prove the soundness of a theory. What would you do after the engine fired up with a throaty roar, spit a couple of times and then settled down to a healthy snarl that indicated a power reserve beyond your expectations?

Lloyd Taylor, who had just this experience on a crisp cool evening in Los Angeles late last Fall, wiped his hands on a shop rag and said, "That ought to do for now boys. Let's go home and get some sleep." Lloyd, to whom the Super Sports two-litre is the culmination of nearly a quarter-century of hard work and unheralded pioneering, wasn't being blasé. It was merely that he had worked 14 hours on that particular Monday and there had never been a doubt in his mind that the unusual mill would do anything but perform admirably.

The big difference between this ocassion and similar ones that had preceeded it in many other shops at many other times was that this particular engine appears on the stage when the scene is set for big things. This may be the happy culmination of a sequence of events that places it at the right place at the right time. In brief, the SS is the first *American* post-war powerplant to be built specifically for a sports car. And if its specs aren't a bombshell in the sports car field, then Ferraris aren't red!



The original Crosley engine was fabricated from sheet metal, however production difficulties and that demon called money dictated a switch to a cast block. But its descendent, the Supersports, is made by a bug-proof process that works.

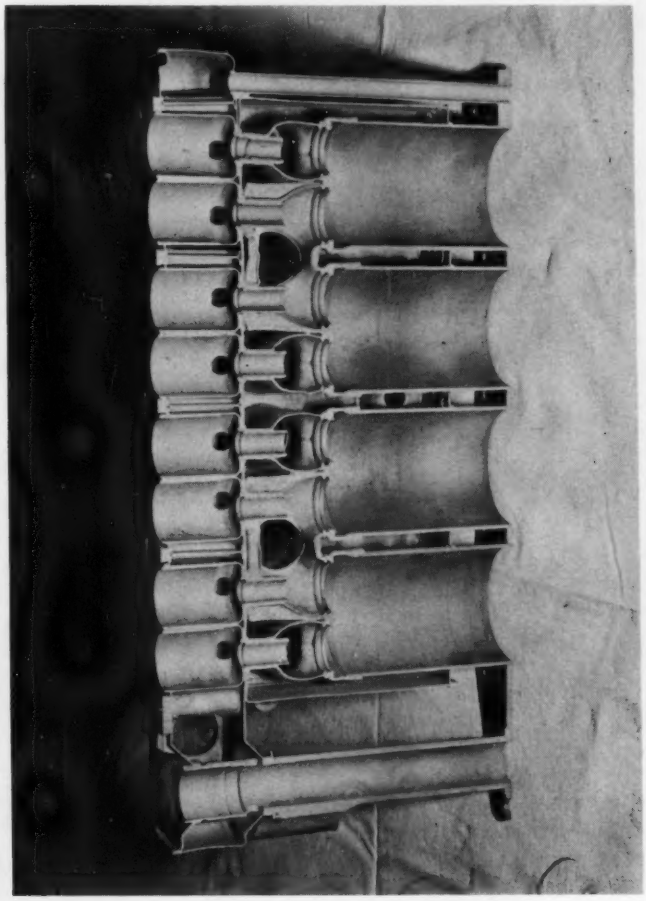


Many of the things anent the SS are of keen interest to the enthusiast, but the fact that there is now a native two-litre engine probably heads the list. Until this time we have been able to storm rather well in the big-bore division with modified Detroit iron; but in the smaller stuff, only the Crosley has held up against foreign invaders. Even the otherwise highly successful Offy has not been able to gain much of a foothold in the swelling ranks of specials because of its limited rev range.

That this two-litre should weigh only 180 pounds and crank out nearly 1 bhp/lb and more than 1 bhp/cu. in. is almost incredible. That its builders have competition uppermost in mind for the breed and that the engine can be stuffed, as is, right into an MG, Healey, TR or other small

car is perhaps the most encouraging aspect of the picture. But, word that the selling price should be around $800 as a replacement engine certainly vies with the other facets for top billing.

The technical aspects of the SS, quickly delineated, show it to be a water-cooled, head-en-block, overhead-cam 4. Bore and stroke are: 3.50 x 3.125 inches. The block is welded steel, incredibly light and rugged. It runs 12/1 compression on *pump gasoline* without pinging under load. On the first model, two dual-throat Solex side-draft 40mm carburetors provided fuel, and sparkplugs were Champion J-6. The first time the engine was fired up on the Dyno it logged 145 hp (uncorrected for temperature, etc.) at 6000 rpm. With carburetion, cam and ignition brought into the best focus,



Cutaway Crosley block, also designed by Lloyd Taylor, shows design features that tie its lineage to the improved version.

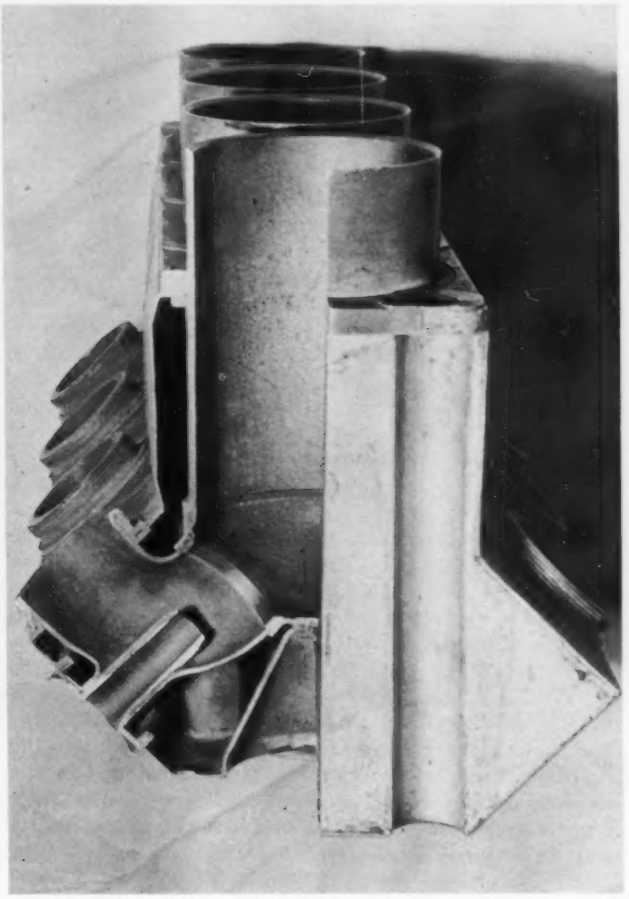
170 @ 7600 is practically certain. In which case, our very own two litre will be on even terms with the hottest continental go-toys in its class . . . Maserati and Ferrari . . . and will underweigh them by nearly 50%!

With a welded steel block as the most unusual part of the engine, we should probably start there in describing it. Such construction is not brand new, it was used on the Liberty aircraft engine of WW I (a design stolen from the Benz racing cars interned in France at the outbreak of hostilities), the Mercedes M196 (considered by many to be the ultimate) and the giant diesels which power railway engines. But, where these units are torch-welded, the SS is fused together in a controlled-atmosphere oven untouched by human hands.

Actually, to get the full flavor of the story, we should go back to the 750cc Crosley, a welded block, and even farther . . . to Oakland, California in the middle thirties and pick up an airline mechanic who built racing equipment in his spare time.

Lloyd Taylor's reputation as a cam grinder and speed-equipment designer spread around the Bay area and soon power-boat owners, as well as the racing fraternity, were consulting him for hop-up items. Business got so good that Lloyd retired from the airline and set up his own shop where he worked over a lot of engines, including the powerful Hisso that powered *Miss Golden Gate* to a second place in the International Boat Races at Detroit.

The heavy weight of these engines and their fragility, in spite of that weight, haunted Lloyd and he began to cast about for some new way of overcoming the deficiencies in-



Cross section of the 96-in. 2-stick oh 4 shows thin wall sections that keep temps low, allowing high compression ratios.

herent to the iron block . . . poor thermal conductivity, inferior wearing qualities and, of course, gross poundage. But, what to use in place of cast iron? Aluminum? Lloyd considered it, but at that time Henry Ford had just come a-cropper with his light-alloy block and it didn't look like too promising an avenue for a poor man. "How about steel? Steel would only have to be about ⅓ as thick to do the same job . . . and, maybe it could be fabricated and welded . . . sort of like exhaust collector rings on radial engines. . . . I wonder?"

Brother Taylor continued to wonder long enough to plan such a block, stamp out the pieces, clamp them together and have them heat-fused in an electric furnace. He then assembled the remainder of the components, built many pieces in his own shop, hooked them all together and turned the crank. The engine not only ran, it ran well and didn't

Maybe Bill Devin has something in mind, as he tunes a carb on the SS engine that logged 145 hp on dyno before tuning.

come unglued under full pressure. The first specimen weighed 40 lbs and developed 21 bhp. Lloyd, feeling that such a lightweight might have commercial applications, tucked it into a sort of briefcase and set out to find someone interested in developing it further.

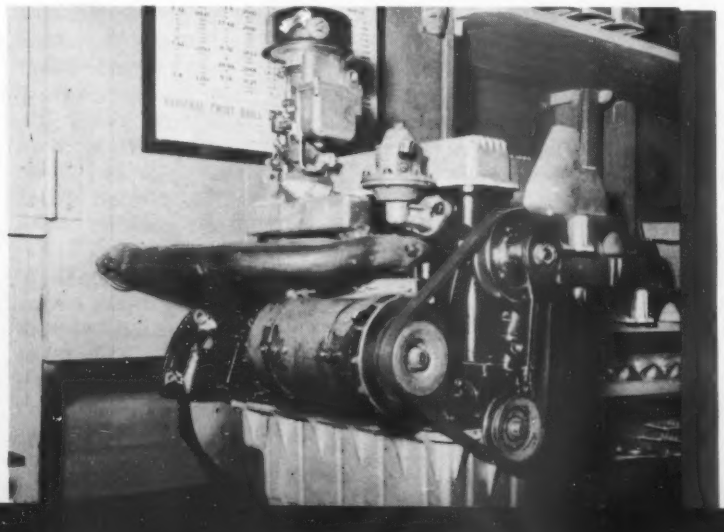
Among those who had a look at the remarkable achievement were the U.S. Navy, Henry Ford and Powell Crosley. As Ford's guest, Taylor spent five weeks with the auto tycoon, and a fabricated block might today be standard in FoMoCo products if the company's founder hadn't been advised against it by his engineers. They were exceedingly proud of their accomplishment in casting the V8 as a single pour and bringing the cost down to $12.00 a unit, or some such ridiculous figure.

The wealthy Cincinatti appliance manufacturer, on the other hand, was regarded by those who knew him as a man who told his engineers which way to point their slide rules and Crosley went for the Taylor design lock, stock and overhead cam.

Lloyd recalls today that he advised Crosley that the engine was strictly experimental . . . a model which he thought could be de-bugged and put into production in a reasonable time; but Crosley was eager to give this newest bit to the country as a wartime contribution. He plunged into tooling immediately. According to Lloyd, the experimental stage was dismissed with the statement that all engineers are inclined to prove things out until the market has passed them by.

(Continued on page 63)

This Crosley engine, after being given the Braje treatment, became a fierce 750 cc contender.



COMPARISON OF CURRENT TWO LITRE ENGINES

AC

Bore (in/mm)	2.56 (65)
Stroke	3.94 (100)
Cyls.	6
Comp. Ratio	8/1
BHP @ rpm	90@4500

BRISTOL

Bore (in/mm)	2.60 (66)
Stroke	3.78 (96)
Cyls.	6
Comp. Ratio	8.5/1
BHP @ rpm	125@5750

FERRARI

Bore (in/mm)	3.54 (88)
Stroke	3.07 (78)
Cyls.	4
Comp. Ratio	9.5/1
BHP @ rpm	170@7000

FRAZER-NASH (Sebring)

Bore (in/mm)	2.60 (66)
Stroke	3.78 (96)
Cyls.	6
Comp. Ratio	8.8/1
BHP @ rpm	140@5750

MASERATI (GT)

Bore (in/mm)	3.01 (76)
Stroke	2.83 (72)
Cyls.	6
Comp. Ratio	8/1
BHP @ rpm	125@6000

MASERATI (Sport)

Bore (in/mm)	3.01 (76)
Stroke	2.83 (72)
Cyls.	6
Comp. Ratio	8.5/1
BHP @ rpm	170@7300

MERCEDES (190SL)

Bore (in/mm)	3.35 (85)
Stroke	3.29 (84)
Cyls.	4
Comp. Ratio	8.5/1
BHP @ rpm	120@5700

OSCA

Bore (in/mm)	2.99 (75)
Stroke	2.87 (72)
Cyls.	6
Comp. Ratio	9/1
BHP @ rpm	165@6500

STANDARD (Triumph)

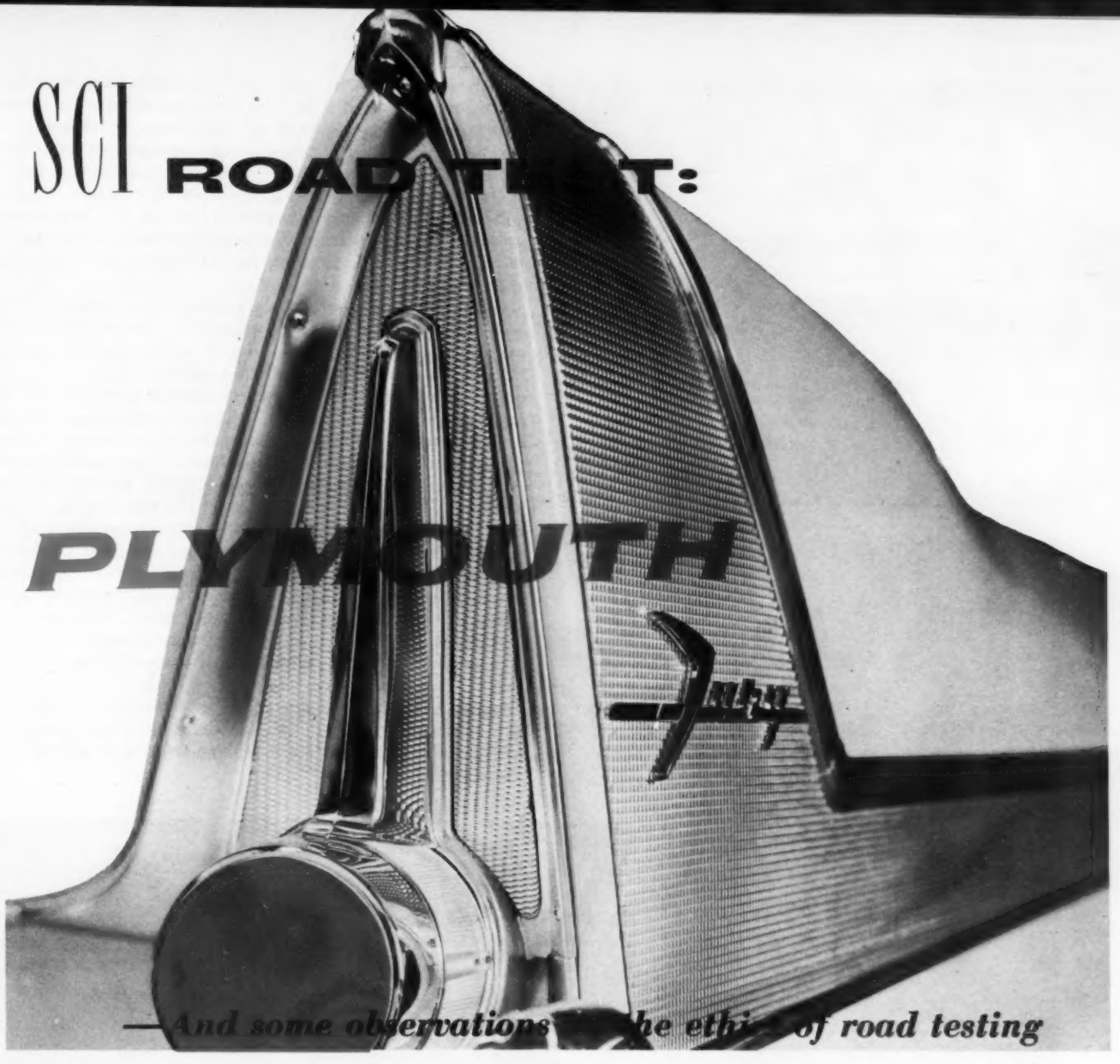
Bore (in/mm)	3.27 (83)
Stroke	3.62 (92)
Cyls.	4
Comp. Ratio	8.5/1
BHP @ rpm	100@5000

SUPER SPORTS

Bore (in/mm)	3.50 (88)
Stroke	3.12 (79)
Cyls.	4
Comp. Ratio	12/1
BHP @ rpm	145@6000 170@7300

(Estimated)

SCI ROAD TEST:



—And some observations on the ethics of road testing

AMONG SPORTS CAR fans there is a small, vocal minority who believes with blind and sincere passion that "if it's foreign it's better." This reverse chauvinism is not limited to Americans. Fangio once told me, "It's the same everywhere. In a machine shop in Italy you pick up a gear and comment on its fine workmanship. As often as not someone whips out a similar part and says with awe, 'But look at *this* gem. *It* was made in Germany.' Or in America."

Those of us who have lived closely with cars of all kinds all our lives and who have test-driven most of the cars made on both sides of the Atlantic for years are in a rare position to make accurate critical evaluations. For years we have cut Detroit to ribbons on many counts. It's not at all unlikely that America's automotive critics and the readers who support them have had more than a little influence on the upward evolution of the Detroit product, even as Uncle Tom McCahill has suggested once or twice. However, "even" Detroit can build a good car, and the majority of SCI's readers do not, we feel sure, jump to the conclusion that only negative evaluations of Detroit products are truthful and that positive findings are lies.

But apparently some of our readers do. In our report of the 1957 Plymouth Fury we said, "It's very difficult to adjust to the fact that here is a big Detroit sedan that can easily out-corner many *bona fide* sports cars." This statement inspired an impassioned letter published in a recent issue of SCI accusing me and/or SCI of getting paid off by Detroit. The writer evidently failed to note that in the report we:

1. Criticised severely and extensively the '57 Fury's very poor low-speed torque and urged radically different camming of the engine.

2. Criticised severely the functioning of the stick-shift transmission and warned potential Fury purchasers to beware of defects in that area.

3. Warned buyers to beware of noisy, bad-fitting rear axle hub tapers.

4. Pointed out that while the brakes were good in Detroit terms, they faded rapidly.

If it's assumed that the reporting of good features involves a pay-off from Detroit, it might be assumed with equal logic that candid discussion of defects involves a penalty. Following this line of reasoning – or of fantasy, which it is – SCI would *owe* money to Plymouth.

We were challenged for praising the Fury's cornering qualities and for suggesting that they could be compared with those of sports cars. So with the '58 Fury we conducted a test that would make our evaluation of cornering ability as completely objective as possible. How do you go about doing this? Well, there are some road courses in the country that are true equalizers – that are so tight, in fact, that 4.9 Ferraris are at a disadvantge and the odds are all in favor of small cars. One of the tightest courses of all and one of the greatest equalizers is Paramount Ranch: 1.8 miles; 11 bends. The official lap record is held by Ken Miles in a

Three people who wrung out the Golden Commando-powered Fury: Al Papp, Race Coordinator for the CSCC; Griff Borgeson; at the wheel, Eric Hauser, well-known West Coast driver who turned a lap at Paramount Ranch in only 1:55.

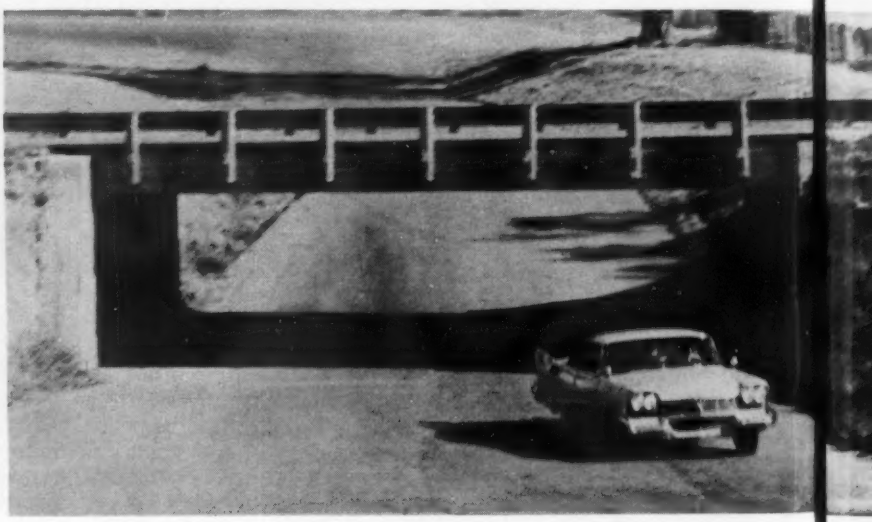
Corner #10, above, is a really tight one. Despite the fair-sized roll angle, the Fury hangs on well without any sudden surprises. At right, the Fury enters turn #2 at 80 mph.

Porsche-Cooper. Plenty of big cars have been tried there but their potential speed is of little avail and the smaller, more nimbly-cornering cars have the advantage. With the gracious cooperation of Paramount's management SCI was granted full use of the course for wringing out the '58 Fury.

Our test car had the 350 cu. in. Golden Commando engine and 4000 miles on the odometer. It was so far from being properly prepared that the brakes required major adjustment. We fixed the brakes, raised the tire pressure to just 30 pounds, and called the car ready.

I am only moderately adept at fast driving and my best laps were 2:05. Eric Hauser, prominent west coast driver, made two practice laps and cut a 1:55. His words of praise for the Fury's handling paralleled our own in the '57 Fury test report. With further practice Hauser could no doubt prune some seconds from his 1:55 time. The streets brake linings faded rapidly; with the optionally available harder linings you could go deeper into the turns and cut the time even more. Other obvious preparational touches would help, too. Hauser's 1:55 was observed and timed by Al Papp, race coordinator of the CSCC. Papp also lapped the course in the Fury. He owns and drives imported sports cars. He pronounced the Fury one of the best-cornering cars in his experience. Beyond that, he stated, it felt outstandingly secure when he extended it fully in the turns.

Hauser's off-the-cuff 1:55 is more than competitive with a great many of the lap times turned by sports cars at Paramount. The *winning* Porsche Super Speedster in the Third Paramount Road Race, for example, averaged 1:54 for six laps. A *winning* M-B 300SL in the fourth race averaged 1:47 for ten laps. The large number of also rans were, of course, slower. The '58 Fury, prepared for racing, should be capable of getting quite close to that 1:47. Just how close is implicit in the official times of big Detroit stockers clocked at a recent USAC stock car event held on this same course. And as you read these figures remember that Miles' sports car lap record is just over 1:36.



Chuck Stevenson's Ford lapped in 1:36.92. Chuck is a *great* driver. But many other top pro drivers in other Detroit makes did almost as well. Jerry Unser's Ford: 1:37.52. Troy Ruttman's Ford: 1:38.23. Jimmy Reece's Pontiac: 1:38.84. Johnny Mantz' Merc: 1:39.00. Johnny Parsons' Olds: 1:40.24. Sam Hanks' Merc: 1:40.29.

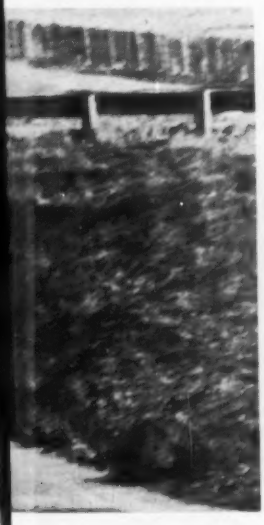
Ken Purdy's "The Big, Fast Four" in last December's SCI stated what is about to be repeated here. For a long, long time nearly the total world supply of performance iron came from Europe. But big changes have taken place recently in domestic machines . . . not just in power plants but in chassis design as well. The lap times achieved by the carefully prepared Detroit stockers at Paramount can obviously be equalled by a Fury-specification Plymouth with similar preparation.

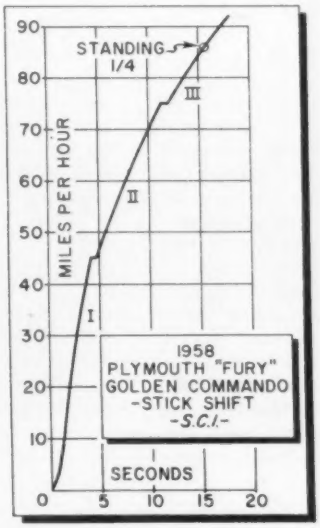
This means a lot to all of us who want machines that work. Not because we plan to go racing in big family cars, but because many of us own them because we need to or choose to, and the car that grips the road securely is a safer car and a more satisfying one to drive.

Now some of our readers are likely to claim that SCI is evaluating the American car against the European and stating that the home product is the best. This is *not* the correct interpretation. SCI brings its readers important information on sports cars, light cars, and performance cars — *all* of them, regardless of where they're made.

In this connection it's our job to report on the literally fantastic progress made in U.S. chassis design in the last very few years. We do not say that Detroit is now "better" than Europe, any more than we say that the 300SL's cornering is "better" than that of the Lancia 2.5 GT. We *do* say that Detroit is catching up (and in some cases *has* caught up) with good European practice. This is a point worthy of recognition and rejoicing.

It's obvious, of course, that the best-handling 4000-lb. car in the world will never match the total, easy perfection of the best-handling 2000-lb. car. The uncanny thing is that





any car as ungainly, as unsuited to agile performance as the current, standardized, bulky Detroit package nevertheless *can* be agile, fast, graceful and secure.

Most European cars have their own individualistic road manners. The differences between most American cars are slight, but the Plymouth (and the Fury in particular) stand out distinctly from most of their compatriots. Anybody is a fool to drive a car at its limits on the open, public road, but on a closed race course you can do it with optimum safety. Hours of extending the Fury at Paramount proved to us that here is a car that always does just what you want it to do. Pushed to its limit on fast, sweeping Turn One it never pushes at the front or swings out at the rear. As you increase speed it sets up a very gradual, very gentle slide, staying

(Continued on page 53)

PLYMOUTH FURY HARDTOP COUPE — 1958
STANDARD SHIFT
PERFORMANCE

TOP SPEED:

Two-way average	114 mph
Fastest one-way run	115 mph

ACCELERATION:

From zero to	Seconds	(1957)
30 mph	2.7	2.8
40 mph	3.6	4.1
50 mph	5.7	6.3
60 mph	7.7	8.5
70 mph	9.9	10.7
80 mph	13.5	15.2
90 mph	17.2	21.7
Standing ¼ mile	15.5	
Speed at end of quarter	86 mph	

SPEED RANGES IN GEARS:

I	0-45 mph
II	9-75 mph
III	14-top

SPEEDOMETER CORRECTIONS:

Indicated	Actual
30	30
40	39
50	48
60	57
70	65
80	75
90	84
100	91

FUEL CONSUMPTION:

Hard driving on test	7 mpg
Average driving (under 60 mph)	12 mpg

BRAKING EFFICIENCY:
(10 successive emergency stops from 60 mph, just short of locking wheels)

Stop	Per cent	Comment
1	85	
2	84	
3	80	
4	60	
5	58	Pulling to side
6	57	
7	56	Pulling badly
8	53	
9	46	Pedal on floor
10	42	

SPECIFICATIONS:

POWER UNIT:

Type	90° V8, wedge combustion chambers
Valve Arrangement	Pushrod ohv, hydraulic tappets
Bore & Stroke	4.06 x 3.37 in (103.2 x 85.7mm)
Stroke/Bore Ratio	0.83/1
Displacement	350 cu in (5740cc)
Compression Ratio	10.0/1
Carburetion by	Dual 4-barrel
Max. Power	305 bhp @ 5000 rpm
Max. Torque	370 lb-ft @ 3600 rpm

DRIVE TRAIN:

Tranamission ratios	
I	2.30
II	1.55
III	1.00
Final drive ratio	3.73
Final drive options	3.36; limited-slip differential
Axle torque taken by	Rear springs

CHASSIS:

Wheelbase	118 in
Front Tread	61 in
Rear Tread	60 in
Suspension, front	Longitudinal torsion bars
Suspension, rear	Longitudinal leaf springs, outboard of frame
Shock absorbers	Oriflo telescopic, 1 in dia
Steering type	Manual: Worm & ball-bearing roller Power: Recirculating ball
Steering wheel turns L to L	Manual: 4.8; Power: 3.5
Brake type	Center-plane, 11 x 2 in.
Brake lining area	184 sq in
Tire size	8.00 x 14

GENERAL:

Length	206 in
Width	79 in
Height	54 in
Weight, test car (half-tank of fuel)	3830 lbs
Weight distribution, F/R	55/45
Fuel capacity	20 U. S. gallons

RATING FACTORS:

Bhp per cu. in	0.87
Bhp per sq. in piston area	2.94
Torque (lb-ft) per cu in	1.06
Pounds per bhp — test car	12.6
Piston speed @ 60 mph	1615 fpm
Piston speed @ max bhp	2815 fpm
Brake lining area per ton (test car)	96.0 sq in
Mph per 1000 rpm	20.9

Safety Faster

by John Christy & Dennis May

DURING THE COURSE of the production run of the T series MG Midgets the men of Abingdon faced up to the fact that wherever MGs are run there'll be those who want more. They'll want MGs, to be sure, but what they want is *more* MG than the dealer is prepared to handle as a matter of course. Something else that was realized was that such people aren't always filled to the brim with bravado when it comes to experimentation — they'd rather bite off a small piece, savor it, then — maybe — come back for more. Thus the stage-by-stage form of soup-cooking that invariably is the form followed by Abingdon's sages.

Now — and at long last — the MG racing department, largely in the person of Mr. Sidney Enever, has counterparted the instructions that came with the late lamented XPAG and XPEG engines powering the T series. These formulae for fun have been released exclusively to SCI in advance of publication date of the factory book. The directions that follow omit nothing the factory included and indeed add some touches not in the book. One section, in fact, does *not* hold benefit of official blessing but more about that later. In the following, wherever special parts are needed they are listed by number as well as description.

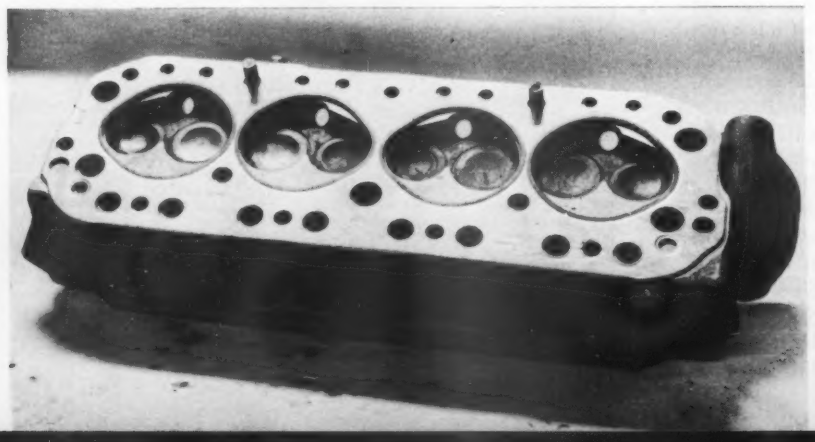
One other point of note is that these directions apply to any BMC B-Type engine no matter what the application. The only proviso being that these directions begin with the engine in late series MGA tune — the others must be brought to that stage first insofar as equipment goes, with exception of course of the special parts. These can be purchased directly and substituted for the original items without concern for the MGA stage of tune.

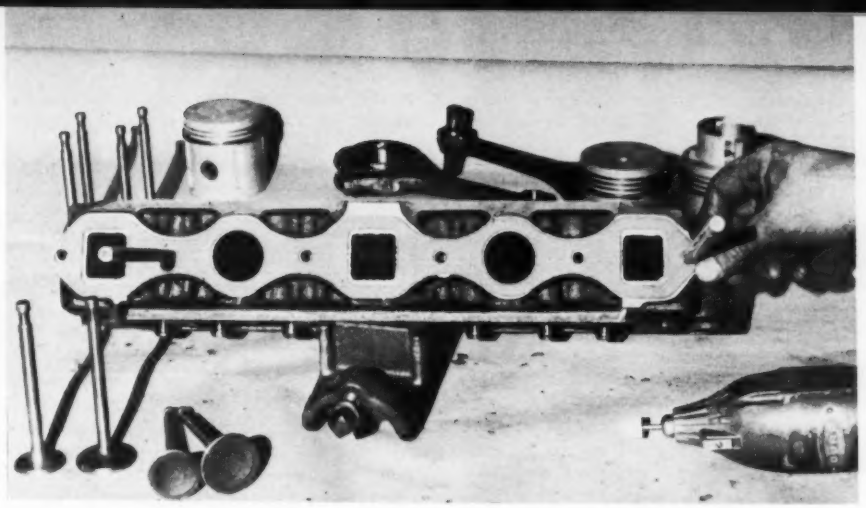
The basic material is a rugged piece of work indeed and the bare block has, in the latest record car, held together while poking out just a tad less than 290 hairy-legged horses with a supercharger boost of 30 psi. Consequently what follows is not likely to shorten the life of the engine if properly done and properly stoked when installed. However, in their always-cautious way the makers have pointed out that super-tuning of this nature is grounds to void the new-car guarantee.

The major difference between the MGA and previous models is that the entire souping process can be accomplished with parts which can be ordered directly out of the MG parts catalogue by any dealer or distributor. As with earlier models the operation can be conducted in easy stages, four in number with two sub-options for special circumstances. Each of these has been thoroughly tested by the MG racing department under the personal direction of Sidney Enever. Each option was built, run on the dynamometer, torn down and then rebuilt and re-tested. Mr. Enever is not one for half-measures where his customers are concerned.

Before getting to the actual stages, for the benefit of those who would prefer to stay within the SCCA and CSCC specifications for production racing, let's cover just what can be done legitimately to get the best out of the engine. Since this engine is a mass production item, it is to be expected that variations in output will occur in the over-the-counter item. About the only

MGA head with gasket shows why combustion chambers should not be carved. Any reshaping would affect gasket sealing. At right, diagram shows the point at which radius must be ground to avoid hot spot and to allow fitting of special pistons.



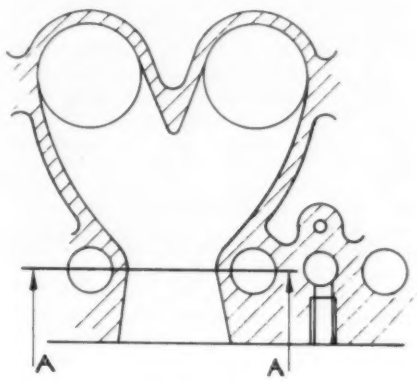


Misalignment is present in any production engine. Exhaust ports may be cut out to align with gasket. Intake ports are ground as shown in diagram (below).

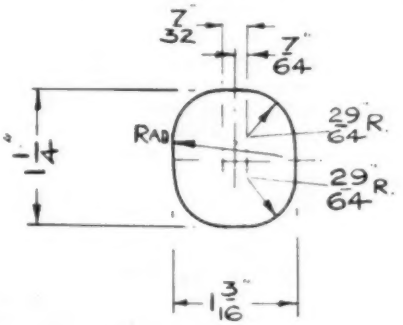
thing that the racing clubs will allow is the smoothing off of these inequalities but you'll be surprised at the amount of difference such smoothing will make. The first point to tackle is the breathing. It should be, but often isn't, understood that intake and exhaust manifolds are seldom accurately matched to the ports involved. Either they are offset slightly or, due to casting tolerances, different in size between manifold and port. Competition rules specifically state that these may be matched up — just take care that the matching doesn't require a quarter-inch of "alignment" grinding. This, however, is only the first step. Tolerances in mass production also allow for variances in several other departments to points far different from those the design engineers intended.

Take valve springs for example. There are two per valve on late models. The outer spring should have an installed pressure of 50 lbs. and a compressed pressure of 105 lbs. The inner coils should have an installed rating of 30 lbs. and a compressed reading of 60. On newly run-in engines variances have been found running all the way down to compressed readings of 80 for outer units and 45 for the inner springs. Since the designed valve-bounce point is 6000 rpm with the full pressure operating it can readily be seen what such lowered pressures can do to top engine speed and valve life.

If you are competition bent and the production category is your *forte,* it would be best when having a 5000 mile valve-lap done to have the springs checked as well. If any are found wanting as to length and pressure it would be advisable to hie oneself down to the nearest MG parts emporium and check out a handful of springs, selecting carefully only those that produce top pressure. This procedure has been known to allow engine speeds higher even than the recommended 6000 rpm with no sign of valve float. Carrying this business one step further you can also grab a fistful of pushrods and find a set in which each piece is the same weight as the other seven. With the cast cams now being used variations in timing aren't as frequent as they once were but if you're really serious about this production competition it might pay to check and if necessary give the stick a touch or two to bring it dead on. Each of these little things helps — not much individually, true, but in the aggregate they can amount to the difference between also-ran and prize-taking.

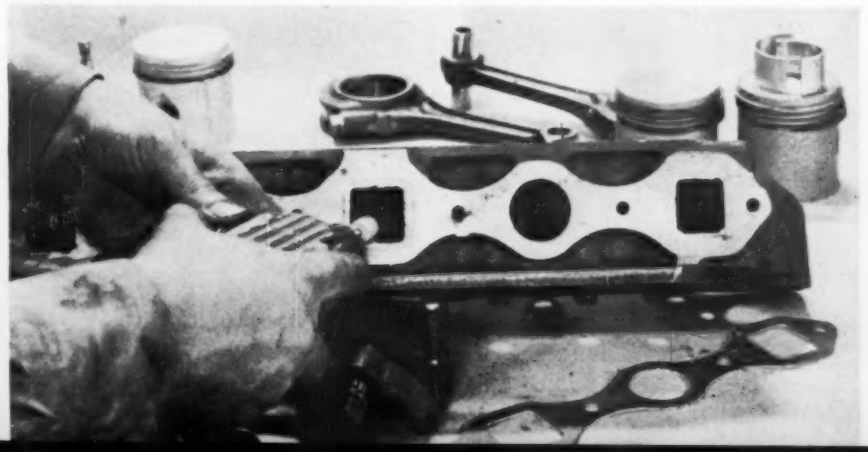


A template should be made to the above diagram to indicate proper port size.



SECTION THROUGH INLET PORT ON 'A-A'

The dimensions given for the template apply to the area at line AA. Care is essential here since water passages are placed very close to narrow portion.



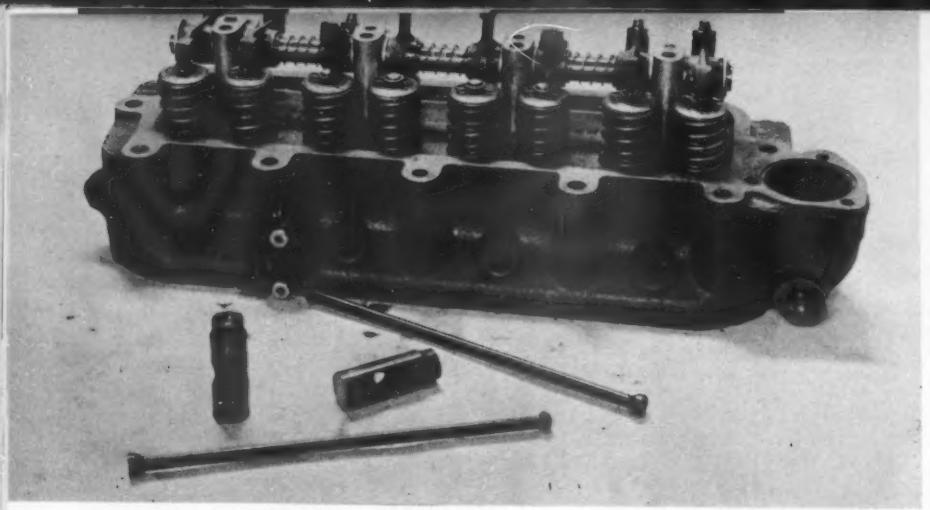
The one thing not pointed out above but vital in the foregoing and an absolute must in what is to follow if the last penny's worth is to be extracted from each operation, is static and dynamic balancing of crank, rods, pistons and the flywheel-clutch assembly. A four-barrel engine is not the smoothest mechanism in the world and anything that can be done to make it smoother will pay off both in power and in service life with a plus factor in increased useable rpm. If you cannot have this done in your area or the size of the working budget won't allow it, you can do without and the engine won't come unsoldered but the man who *has* had it done will, all other factors being equal, do you when the chips are down in competition.

Now let's get down to the business at hand — that of extracting more horses than originally intended for this particular stable.

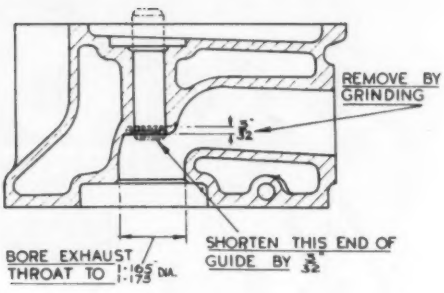
STAGE 1

This operation is the mildest form of hop-up but is basic to all the steps that follow. Some of it has been done on late engines from #17152 at least as far as general dimensions are concerned but even these can stand a touch up with the polishing stone to take care of production tolerances. It is designed to take partial care of the prime gripe of every knowledgeable speedcrafter who has ever taken a good long look at this engine — the complaint that the intake ports are not only siamesed but that each port is smaller in area than just one of the two intake valves it serves.

Inspection of the ports of the MGA head will show that they are tapered inward for a distance of about one inch at which point they widen out into a large chamber feeding two intake valves. The point at which the port is narrowest is the point of attack. This narrow throat can be enlarged to 1-3/16 inches in width and 1¼ inches in height. You can probably increase each dimension by 1/32 if you are braver than Dick Tracy but take care! The reason for the narrowing is that two water passages run vertically alongside each intake port — you're not drilling wells, so be conservative with the grinder. Radii of the corners of this passage are also large, being 29/64 of an inch at each corner. The factory suggests that a metal template be cut to those dimensions and attached to a long bolt. In this way the port can be ground to a point just allowing this template to pass through.



B-Type BMC head is a sturdy, solid item and quite free of tendency to warp. Valve gear is equally rugged and unbreakable although valve springs are short.



Exhaust throat and valve guide should be altered on early engines as shown.

Lightly grind and polish the entire manifold and port system or all that you can reach but be careful not to alter the shape of the passages other than described above. Do not change the shape of the valve throats except on engines prior to #4045 in which the exhaust throat should be bored to 1.175 of an inch and the valve guide shortened 3/32 of an inch. Later engines already have this modification.

The heart shaped combustion chamber is the final point of attack in this stage insofar as chopping metal goes except for a final matching of ports to manifolds. You will note that the combustion chamber peaks between the valves and in many engines this may come to a sharp point while in others it will be somewhat rounded. If this is as far as you intend to go with the engine grind this to a 1/8 of an inch radius. If you intend to go further or there is a possibility you might succumb later to power-hunger, grind it to a 3/16-inch radius — this last to make room for a piece of equipment about which we will talk later. The chambers are already pretty well finished by the factory but they can stand a careful polishing, being careful not to grind metal away since all you can do is lose compression thereby. Any enlargement around the walls might also impair the gas seal.

Finally, if you live sufficiently close to sea level you can try the slightly richer SU carburetor needles marked C.C. The net result will give 75 bhp at 5750 rpm and if all the balancing and selective fitting of valve gear described earlier is done you might just pick up a bit more. The factory says 75, though, and they own the dyno.

STAGE 2

This one is strictly for low and mid range rpm charge, and in fact does less than nothing at the top end except for cutting back peak speed. The idea is to gain two or three bhp at the middle range (around 3000 rpm) and it might be useful for dragging, gymkhanas and stump-pulling contests. The effect is achieved by a switch to a cam with some of the characteristics of a tractor layout, at least on paper, coupled with the procedures as outlined in Stage 1 and a new ignition.

The cam is listed as part #1.H. 603 (which is *not* a competition part number) and its characteristics are as follows: Intake opens 5° BTDC and closes 45° ABDC, exhaust opens 40° BBDC and closes 10° ATDC. Valve lift is .322 of an inch and tappet setting is .015 of an inch.

The ignition recommended by the factory for this dragster is part #1.H. 1036. The standard igniter can be used if finances prohibit but the replacement item has an advance curve tailored to go with the 603 cam and the valve characteristics it produces. Setting on this ignition is four degrees before top dead center.

For additional urge this stage has a sub-option guaranteed to make other MGA owners extremely envious at least until you hit about 4500 rpm. You will note that unlike the recommendations for the XPAG and XPEG engines no head milling has been mentioned. The reason is simple — it's not necessary. The stock MGA pistons come with concave heads with a depression cavity of 4.85 cc. The factory has very obligingly built a set of pistons without this cavity and installation of these will raise the compression ratio from the stock 8.3 to 1 up to a respectable 9 to 1. These are listed as part #1.H. 1078 and come complete with rings and wristpins.

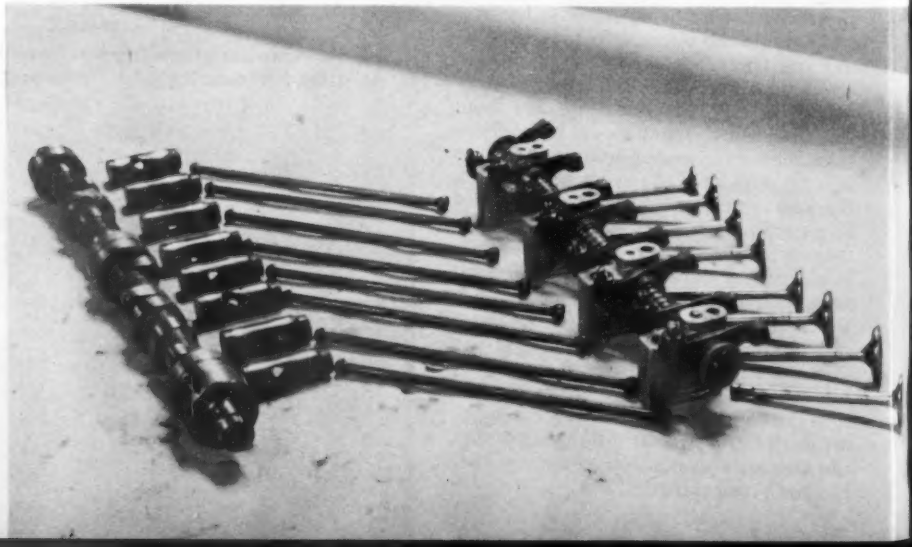
This stage if carried through to the compression boost should give about the same top end as the stock product and at the same time give a healthy boot in the back at normal cruising speeds — ideal for the stop-light grand prix. It will also make things very tough for tech inspectors at production races, particularly those held on tight courses.

STAGE 3

This one is so simple that it barely needs mentioning, aiming only to produce more

MGA valves are meaty items that can take a good amount of cutting down.

Here is where care pays off. Select all valve gear so that each component matches its counterpart in weight, using the lightest pieces as criteria.



power at the top end and make for a general improvement over the whole range. First, carry out the Stage 1 directions as described. Then install the flat-top 1.H. 1078 pistons as described in the latter part of Stage 2. This requires premium fuel and a switch to Champion N-5 plugs for street use and N-3 plugs for racing or for continuous high speed driving. Use the standard igniter and keep the setting at four degrees BTDC. The C.C. carburetor needles are prescribed in place of the stock G.S. needles. According to how well the Stage 1 directions and the selective fitting have been carried out the engine should now deliver between 78 and 80 bhp at 6000 rpm with something extra in hand if the valves don't float.

STAGE 4

This with its sub-option is the big step — as close as the factory will allow to full race, at least officially.

The start is as always with the Stage 1 operation and the rest of the rites that should precede it. Then make sure your corner gas station has super-premium 100-plus octane fuel because you're going to need it if the engine isn't to sound like a handful of dry peas in a coffee can.

After solving the above, order a set of pistons, part #1.H. 1108 which will give the engine a compression ratio of 10 to 1. These have raised domes and necessitate the chamfering of the combusition space divider as described in Stage 1 to a radius of 3/16 of an inch. These pistons have floating wristpins so a special set of connecting rods will also have to be purchased. These come in matched sets, one set numbered AEH 431 for cylinders two and four and the other set numbered AEH 433 for cylinders one and three. *Do not mix them up!* The pistons are shaped to fit the combustion space and will only fit with the sloping face *toward* the spark plug. With the pistons installed, put a small roll of plasticine or putty on each piston and install the head temporarily; then turn the engine over by hand for one complete revolution. Remove the head and measure the clearance between the piston and the combustion space divider as indicated by the clay on the piston. If the clearance is 1/16 of an inch you're in good shape, otherwise grind enough more off the divider to make up the clearance.

Before installing the pistons it might be well to observe a point of caution. A compression ratio of 10 to 1 on this block is quite a squeeze and it's best to be sure things are going to hold. To really be sure, remove all the studs and smear lapping compound on the head or the block and then work the head over the block to mate-lap the surfaces to a perfect fit. Ordinary silver (aluminum) paint makes the best gasket sealer. After final assembly be sure to follow the MG company's directions for torquing down the head. This is one operation where you must beg, borrow or otherwise acquire one very necessary tool — a torque wrench. No one can guess an accurate torque setting with a power-bar and Mr. Enever and company are very specific. Their prescription is 50 lb-ft, no more and *no less.*

As of this point you should have 86 bhp on tap at 6000 rpm but if the purse can stand it, this isn't the end, although it is about as far as one would want to go if the car is to be used essentially on the public thoroughfares.

Still within the area of Stage 4 is one more shot. By this time more carburetion is indicated and here we go to 1¾ inch SU carburetors. The part number for these is AUC 780 and they demand a special manifold which for the MGA *is* in the catalogue, numbered AEH 200. This last is still a production item and needs the polishing treatment described in Stage 1. The AUC carburetors are fitted with .100

(Continued on page 54)

Any and all connecting rods, whether new, used or otherwise should be carefully aligned before use and after a balance job if the engine is to stay in one piece under added racing stress.

Gears can be set up as semi-quick-change units by pre-assembling the set in the carrier. This allows the gear swapping to be done in unit merely by dropping drive shaft and half-pulling the axle shafts to allow removal.

Stock pistons have concave crowns as shown at right. Flat top pistons are intermediate at 9 to 1. A second set not shown, raises compression to 10/1.

GEORGE EYSTON - TRIPLE CENTURION

by Dennis May

"Big cars, big speed," said the Captain — and proved it!

PEOPLE who design cars for the Land Speed Record generally have too much sense or not enough courage to drive them themselves, but there have been exceptions. One such, and the only surviving example, is Capt. George Eyston. Since the death of John Cobb in 1952, Eyston has been the world's fastest living motorist. Odd as it seems in a day and age of medium displacement sports cars with 200 mph on the tips of their tongues, only three drivers have ever beaten the triple century. Two of them, of course, Campbell and Cobb, are dead. The third, sexagenarian George Edward Thomas Eyston, is not only alive but also a summit figure in the autosport worlds of two continents, equally active and honored on both sides of the Atlantic.

Eyston personally evolved the overall designs; in 1937 these took 3-D form as *Thunderbolt*, all-time's biggest, heaviest and most powerful automobile – 30 feet long, 7 tons in weight, and harnessing 5000 horsepower from two Rolls Royce airplane engines aggregating over 73 litres. Nobody but George ever drove *Thunderbolt*, even on just the warm-up runs. Three times, once in 1937 and twice the following year, the big bairn arrowed over the salt at the fastest land speed on record, first 312 mph, then 345.5, finally 357.5. Although Cobb's Railton officially was the first to exceed three and one half centuries, this honor would likely have been Eyston's if the timing apparatus hadn't nodded off during the second of two runs he made on August 24, 1938. The first gave 347.16. Going back, the rev-counters showed *Thunderbolt* to be traveling appreciably faster–354 per hour, Eyston estimated–but the electric eye never gave a wink. Expert diagnosis was that reflection of the sun's rays off the car's polished aluminum flanks had been to blame. Eyston subsequently took the timekeepers' advice and had the offending surfaces painted matt black, but before he could again hit his August 24 form, Cobb had made a round-trip average of 350.2.

Steered as it was through two interconnected pairs of front wheels, *Thunderbolt* was sometimes facetiously referred to as "Eyston's four-in-hand." Coincidentally, his earliest experience in relatively fast travel on wheels had been at the reins of a veritable four-in-hand. In George's boyhood his father had been famous for miles around the 400-year-old ancestral seat of the Eystons at East Hendred, Berkshire, as an amatuer coachman. In unbending moods Eyston *père* would shift over on the box and give young George the whip hand for spells. By further coincidence, a favorite objective for these haymotor excursions was the ancient Red Lion inn at Abingdon, just down the road from the site of the future MG factory, from which would roll, almost a quarter of a century later, the Eyston-bespoke Magic Midget and Magic Magnette record cars.

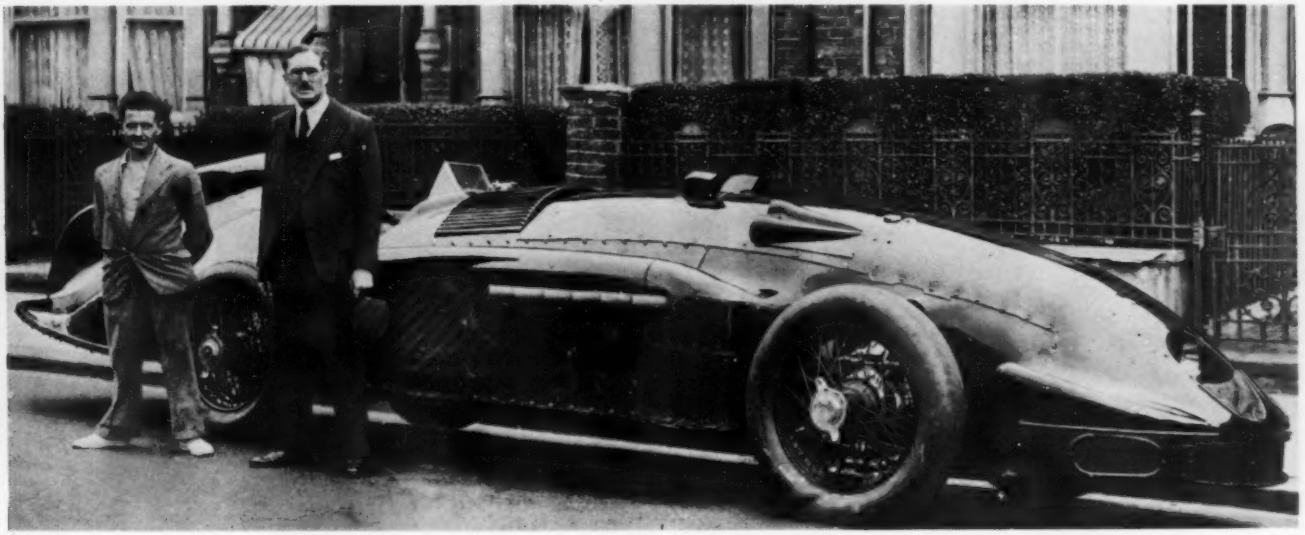
When *Thunderbolt* finally perished by fire at Wellington, New Zealand, during an exhibition tour, nobody could say she didn't have it coming. Cars, like men, "owe God a death,"

and the *Thunderbolt*-Eyston partnership made several feints at settling the debt. Perhaps their narrowest and luckiest escape was one that to my knowledge has never been reported up to this writing. Apart from the driver himself, who incidentally doesn't mention it in *Fastest on Earth,* his book on the history of the Land Speed Record, there were no eyewitnesses to the affair.

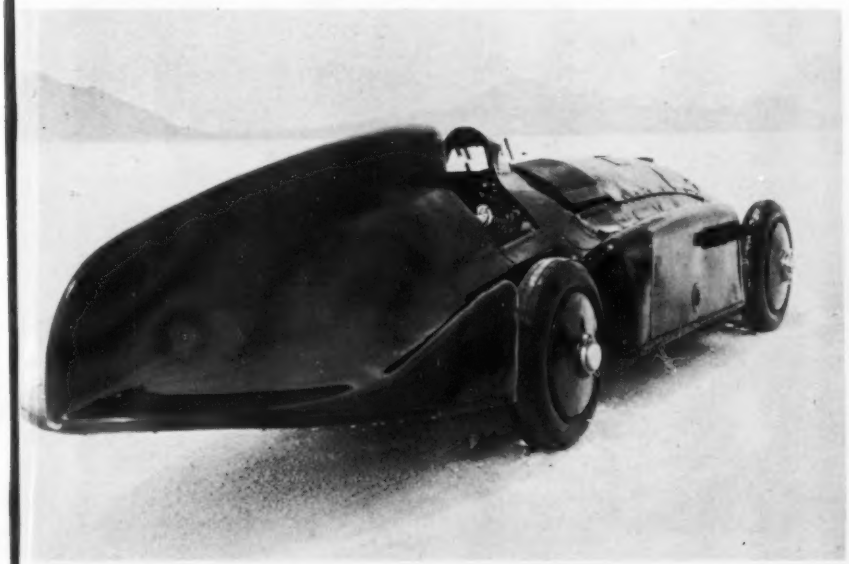
It happened on the salt in 1938, during *in camera* trials following the 357.5 mph record. Eyston and his technicians had reason to believe, as a result of on the spot mods and George's improving familiarity with the brute, that the car was already capable of considerably higher speeds than those officially clocked. These private tests, conducted after the departure of the timekeepers and other hitherto interested parties, were for the purpose of confirming paper calculations with a view to new attempts at a future date. Sure enough, theory and practice were right in step. According to Bert Denly, who was first on the scene after the lamed monster had reeled and gyrated to a lopsided halt, *Thunderbolt* was making close to 400 mph when the anchorage of one of the rear suspension wishbones broke, clenching the wheel against the chassis girder and locking it solid.

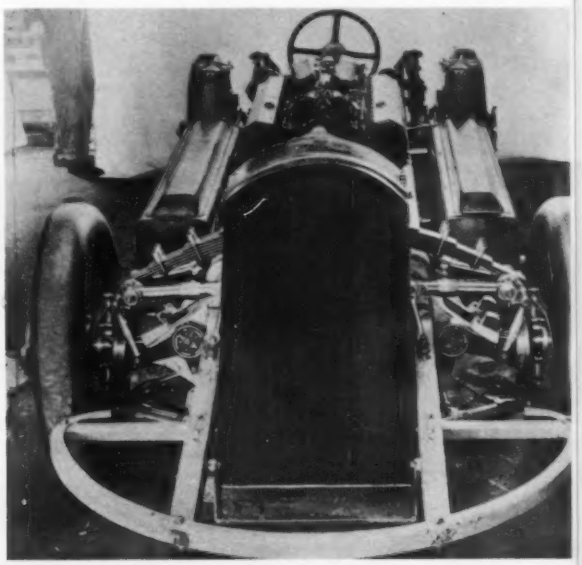
Denly's recollection of Eyston's reaction is that "he didn't say much." In crises, of which he has had his fair share in seventeen years of speed on land and water, Eyston never did say much.

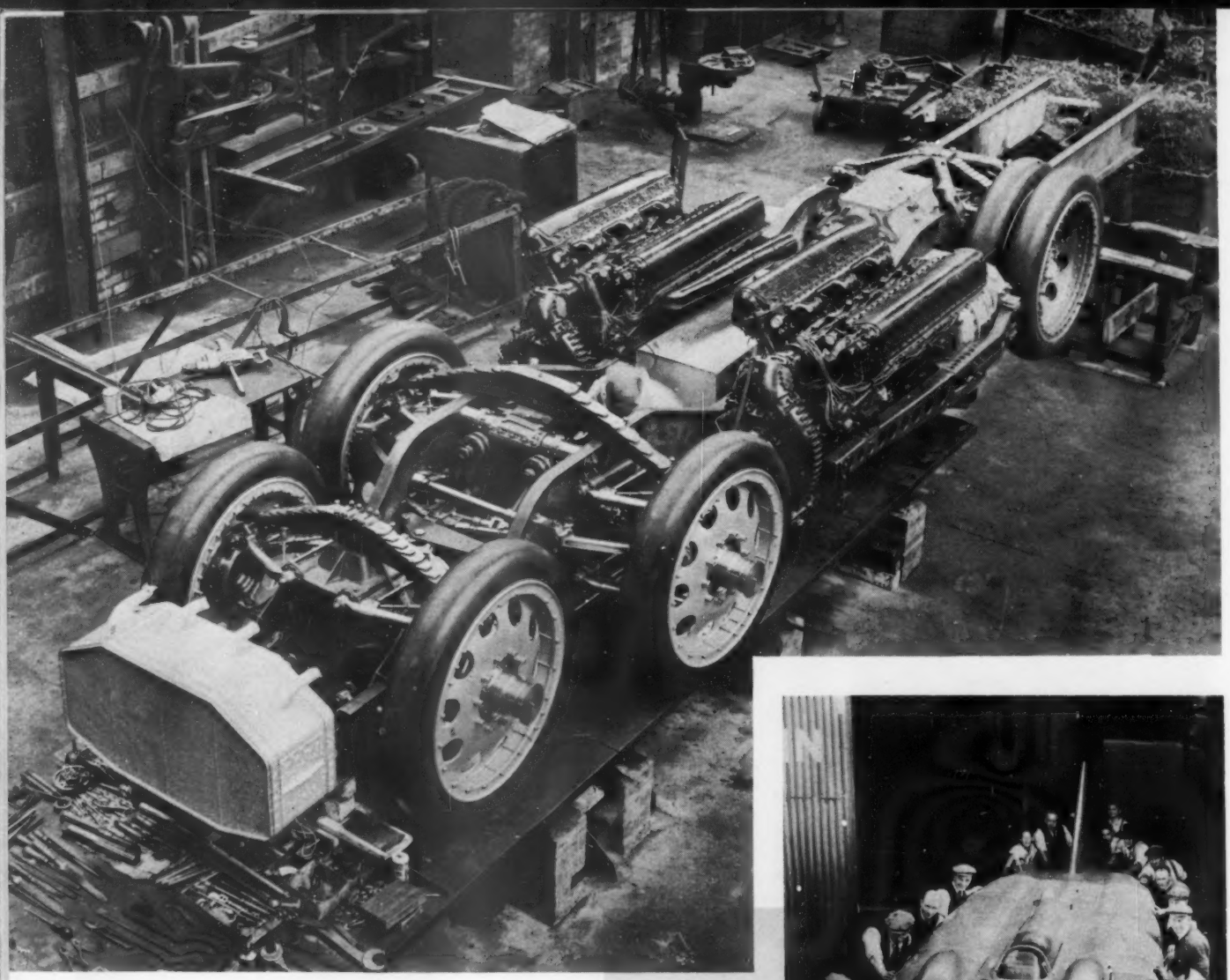
Although it was his nature to make light—or more exactly, to refrain from making anything—of his miraculous deliverances, George didn't intend to leave Bonneville on a bier if he could help it. To him, G.E.T. Eyston in the role of a dead hero savored of a piece of gross miscasting. It was for this reason, when *Thunderbolt's* cockpit was sealed right in under a transparent dome as part of a general aerodynamic improvements program in the winter of 1937/38, that he decided in future he would always use a respirator. He had worn one (surmounting his famous asbestos suit) while breaking records on tight-fitting Midgets at Montlhéry years earlier, so he was anured to humorists' allusions to bagpipes. At Bonneville, as it developed, the gasmask undoubtedly saved his life. Chassis modifications for 1938 had included a makeover to servo operation for *Thunderbolt's* disc brakes (there were windjammer panels behind the cockpit as well). First time on, at around 260 miles per hour, the servo did a square job on pedal-push multiplication and burned the lin-

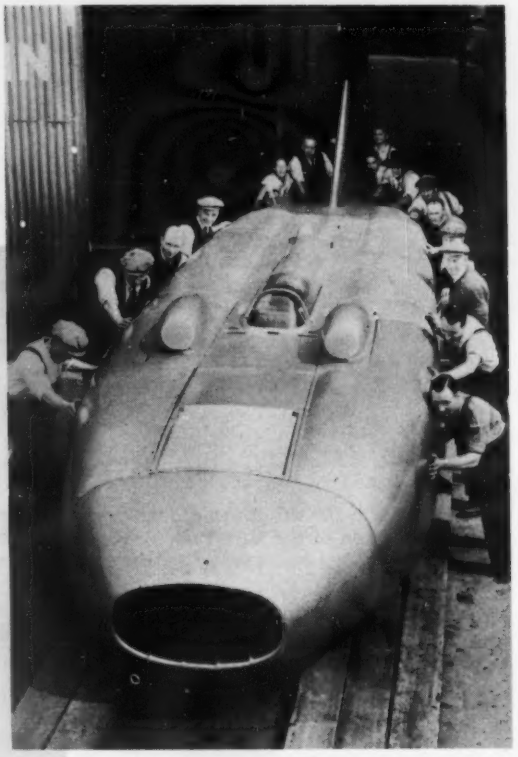


Eyston, and the diminutive Bert Denly, who shared so many of The Skipper's record bouts, pose alongside Speed of the Wind. Speed of the Wind *on the salt, where in 1937 Eyston and Denly averaged 163.68 mph for twelve hours. With offset nose fin and canted springing, car turned 10 miles* hands off *at 165. Chassis had front drive, transverse springs, side tanks.*

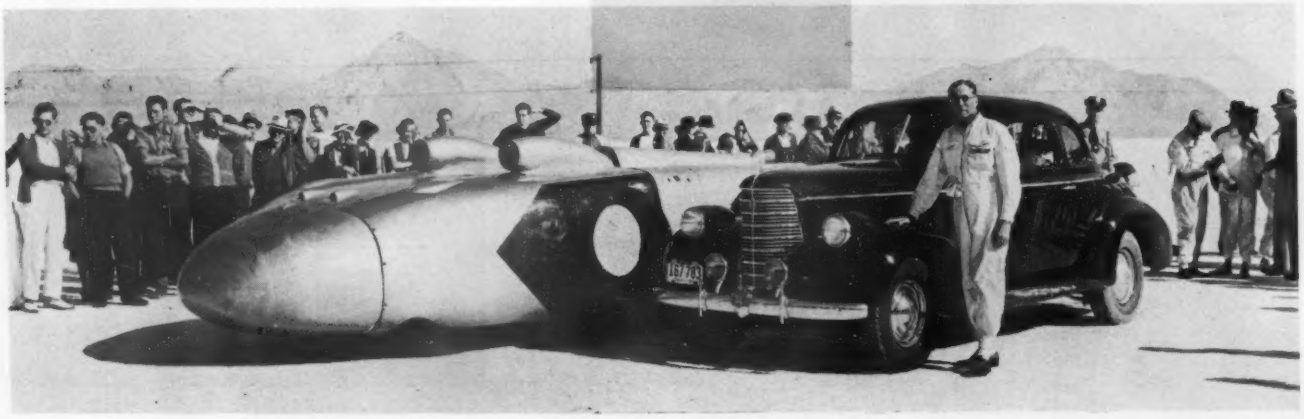








The front-wheel drive chassis that was shared between the gasoline powered Speed of the Wind *(400 hp Rolls Royce Kestrel engines) and the oil-burning* Flying Spray. Thunderbolt, *posed with current-model auto, in its final shape, with no fin, bigger air scoops, bullet nose (no radiator). Prior to this (pre-'38),* Thunderbolt, *with radiator, open cockpit, tail fin shown being pushed from hanger.*



ings to powder in half a mile. Located as they were, approximately alongside Eyston's shins, the brakes burped the resulting smoke and fumes directly into the cockpit through the pedal slots. Completely blinded, but at least able to breathe, George steered by guess for interminable seconds. *Thunderbolt* veered right, into the clear. If it had gone the other way, chances are it would have collected one of its own replenishment depots, where a score of mechanics stood frozen to their footprints in fear for The Captain's life.

Power output I have quoted for this car, 5000 bph, was the final figure, reached in 1938 after sundry attentions to the engines and their appurtenances. The enormous forward-facing airscoops, for instance, jutting from the deck behind the cockpit, were still further increased in section, and thereby enabled 73 litres of engine to swallow 200,000 litres of air per minute at maximum power.

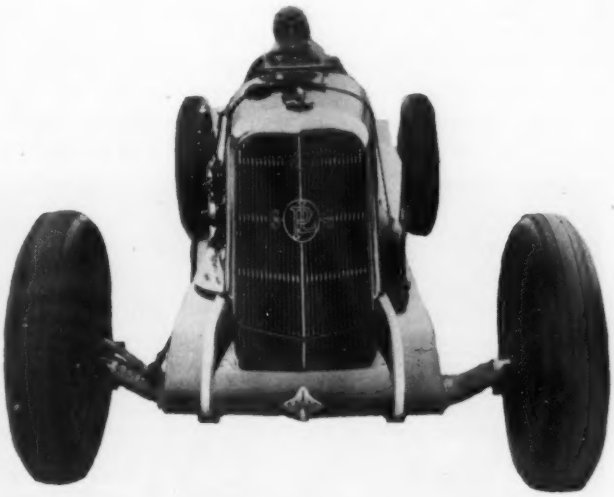
Various important drag-defeating measures were adopted, too, apart from the sealing in of the cockpit already mentioned. The big tail fin was removed and so was the radiator, the latter's air intake aperture being stoppered off with a sort of sheet-metal goitre that must have greatly improved the car's penetrative qualities. In the short time available, however, it wasn't possible to rig up ice tanks for the coolant to circulate through (*à la* Railton), an omission that led to George being almost casseroled alive the last time he felled the L.S.R. As he afterwards wrote in *Fastest on Earth*: "We had not reached the measured distance before the heat flow from the hot water in the nose became almost intolerable. I knew I would have to stick it out for quite a while, but each second the heat intensified, roaring up like a blast from a furnace. . . . I knew that there was little margin, so that perhaps a couple of dozen joints in the water piping might spring a leak under the strain, and a mass of boiling water pour out."

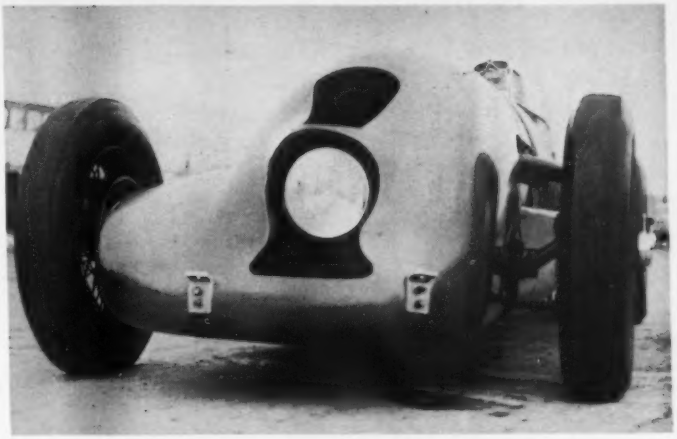
In round figures, *Thunderbolt's* power-weight ratio was just about equal to that of Cobb's Railton, which was approximately half as powerful and half as heavy. The Railton's best two-way speed prewar, 369.70 mph, was only 12 per hour up on the mighty four-in-hand, the former's smaller cross-section and superior aerodynamic shape easily accounting for this difference.

If Eyston had a one-track mind, so had Leonardo da Vinci. George's record cars covered an engine displacement range of over 72 litres, from 750 Midgets to *Thunderbolt*—a kind of

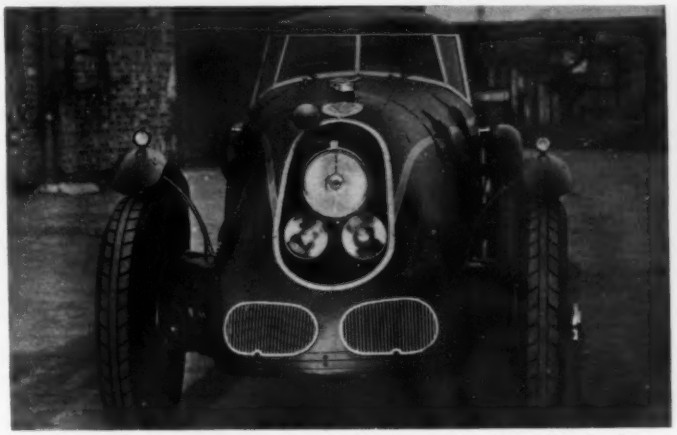
(Continued on page 48)

George Eyston astride his eight-liter Panhard, likened by Dennis May to "a grandfather's clock laid on its side".



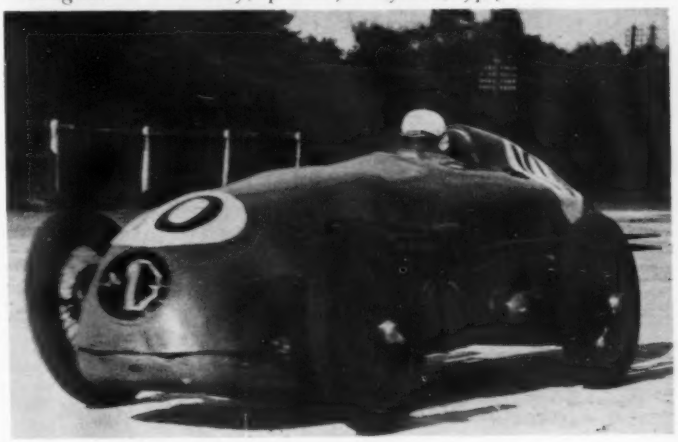


With George and Bert co-driving, this single-seat Hotchkiss once held the world's twenty-four hour record at 116 mph.



The Chrysler-A.E.C., with diesel bus engine, that did the last 6 of 24 hours with one of chassis side members broken in two.

Eyston on Brooklands Outer Circuit with one of his mid-'30's Magnettes. The body, special for Eyston, typified track cars.



George on salt in 1954, his swansong year as record breaker. Car EX179, powered by unblown MG engine.

MARCH '58
SPORTS CARS ILLUSTRATED

SCI ROAD TEST: TRIUMPH TR3

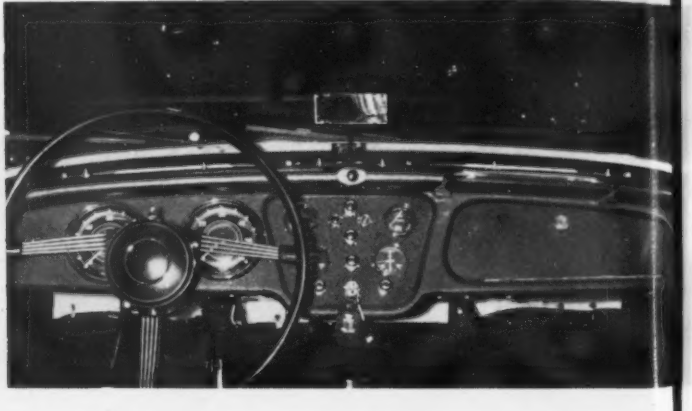
SELDOM, IF EVER, remembering back over the last few years, have we ever met a man who bought a TR2 or a TR3 and regretted the purchase. We well remember the first time back in '54 when we climbed into a test TR2, one of the very first in this country. After a day with the car we were left wondering how they could bolt together that much car for so little money – it was one of those few cars that one is actually reluctant to clamber out of. Now, four years, loads of test miles and two models later we still get the same feeling – even more so. For sheer fun driving, the TR3 for '58 is hard to beat regardless of price.

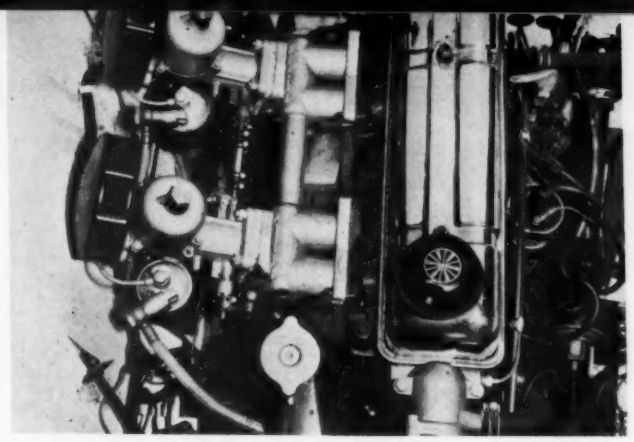
The paramount changes in this model are in styling. The new latticed grille opening is recessed into a suggested snout-effect, a la Ferrari. The headlight bulges are smaller, and are also incorporated into the theme of the car, and of course are sealed beams. Across the hood the name is spelled out in large (but not too large) letters. A fuller and sturdier bumper spans the front, protecting the headlights and fenders as well as the grille. The appearance is a lot smoother because of these changes.

The TR3 supplied us by Standard-Triumph Motor Company was not a super-tuned cream puff. Service manager Peter Snow felt that the best way to evaluate a Triumph is to test the one that the next customer would have bought, so he just drove one out and gave it to us. This one is now a demonstrator.

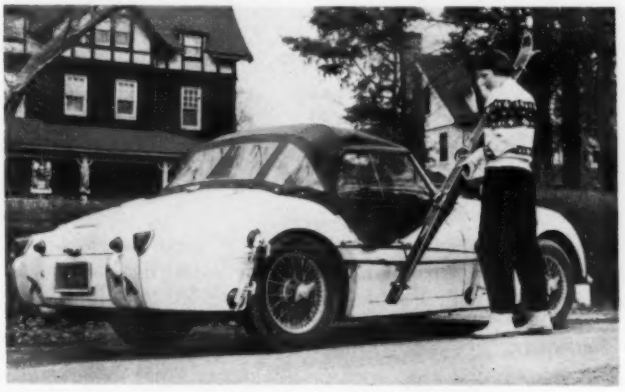
But drive it we did! When we picked up the car, the odometer read *thirty-five* miles. Before making performance runs, or road tests of any kind, we just drove, putting over two thousand miles on the car in two weeks. This mileage ranged from close New York City traffic to ranging up to Belleayre Mountain on the Thruway for a week-end of skiing. The car behaved no matter what we did to it, averaged 26 mpg for the first thousand, and is now delivering in the order of 28 mpg. Unquestionably it will keep getting better. So far we've added no oil.

TR3 corners flat at high speed, such as on the "S" turns at Lime Rock. It seems to have an oversteering quality that makes it want power in turns to hold comfortable clip angles. Interior is roomy, well instrumented, finished in leather.





Engine is identical to last year's unit – one hundred very active horses that are easy to get at. Top speed: 104 mph.



A sports car for winter sports, too: in the interests of reader information, Associate Editor and friend borrowed a ski rack from Alpine Ski Shop and test-drove to Belleayre Mt.

The engine, as well as the gearing and other mechanical components, is identical to last year's Triumph engine, exactly – right down to the last bolt. There is plenty of power, even around 2000 revs, but the engine likes to *go* over the 3000 mark. This is the zone, 3000 to 4500, where you really move out when you punch the throttle.

The gear box on our new car was tight, but by the end of 2000 miles it slipped easily from gear to gear. The hydraulically-operated clutch is easy to work, gradually engaging, and positive when it pops in. But the short gear shift lever is perhaps the nicest feature in this department: we changed gears by reaching out and taking hold of the rubber dust cover on the stick, and changed gear slots by moving just the thumb. It's as easy as that.

Acceleration can be neck snapping if you want it to be: on the other hand the smooth-engaging clutch and good torque characteristics at the low end permit gentle take-offs, too. Two thousand revs is forty mph in fourth, but this same 2000 is plenty to get you off the mark, if you want smoothness and aren't in a hurry.

The brakes leave absolutely nothing to be desired. We made more than ten consecutive stops from sixty miles per hour – hard stops with just enough pressure to keep from locking the wheels. The adjustment of the rear (drum) brakes was faulty, and despite the fact that on every stop the right-rear wheel locked, our gauge reading was in the order of ⅔ "g," or approximately 70% efficiency on *every* stop. Apparently disc brakes of this type and size are able to do most all of the stopping. It is interesting to ponder, however, how we would have stopped if the brakes had been adjusted perfectly! The brakes felt as good when we finished as they did when we started.

The very first day that we had the car, it snowed. Taking the car out that evening, we were negotiating a twisting, unlighted, and deep-slush covered road at a fairly good velocity. The Triumph feels good even under these driving

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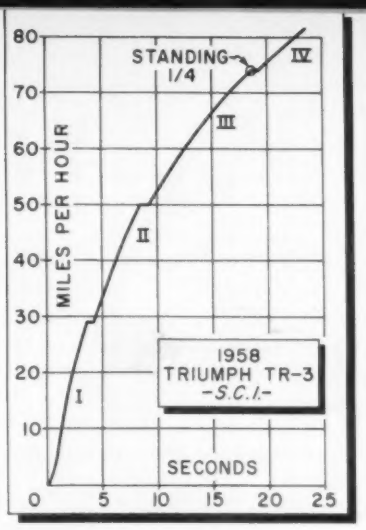


PERFORMANCE

TOP SPEED:

Two-way average	103 mph
Fastest one-way run	104 mph

ACCELERATION:

From zero to	seconds
30 mph	4.4
40 mph	6.3
50 mph	8.4
60 mph	12.6
70 mph	16.6
80 mph	22.6
Standing ¼ mile	18.6
Speed at end of quarter	74 mph

FUEL CONSUMPTION:

Hard Driving	17 mpg
Average Driving	30 mpg

BRAKING EFFICIENCY:

More than ten consecutive emergency stops from 60 mph were made at 2/3 of a g without any loss of pedal. However, on each stop, the right rear brake locked.

SPECIFICATIONS

POWER UNIT:

Type	In-line 4
Valve Arrangement	push rod ohv
Bore & Stroke	3.27 x 3.62 in (83 x 92 mm)
Stroke/Bore Ratio	1.11/1
Displacement	121.5 cu in (1991 cc)
Compression Ratio	8.5/1
Carburetion by	Two Su H.6 sidedraft
Max. Power	100 bhp @ 5000 rpm
Max. Torque @ rpm	118 lb-ft @ 3000 rpm
Idle Speed	800 rpm

DRIVE TRAIN:

Transmission ratios	I	3.38
	II	2.00
	III	1.32
	IV	1.00
Final drive ratio (test car)		4.11
Final drive ratio with OD		4.55 (3.7 in OD)
Axle torque taken by		Leaf springs

CHASSIS:

Wheelbase	88 in
Front Tread	45 in
Rear Tread	45½ in
Suspension, front	Coil and wishbone
Suspension, rear	Solid axle, leaf spring
Shock absorbers	Telescopic front, piston rear
Steering type	Cam and lever
Turning diameter	38 ft
Brake type	Girling 11 in disc front
Brake lining area	Girling or Lockheed drum rear
Rubbed area	248 sq in front, 87 rear
Tire size	155 x 15 Michelin X (equiv. to 5.50 x 15)

GENERAL:

Length	151 in
Width	55½ in
Height	50 in
Weight, test car	2135 lbs
Weight distribution, F/R	53/47
Weight distribution, F/R, with driver	51/49
Fuel capacity	15 U. S. gallons

RATING FACTORS:

Bhp per cu. in.	0.82
Bhp per sq. in. piston area	2.99
Torque (lb-ft) per cu. in.	0.98
Pounds per bhp – test car	21.4
Piston speed @ 60 mph	2065 fpm
Piston sped @ max power	3010 fpm
Brake's rubbed area per ton	315 sq in

Vanwall Vindicated

by Karl Ludvigsen

FINALLY acclaimed as one of the two greatest road racing drivers the world has ever seen, Juan Fangio has yet to receive the recognition due him as a seer. Yet the five-time champion reached this peak not only by his uncanny skill, but also by an equally-eerie ability to sell his talents to that *Scuderia* most likely to succeed in the coming year. His choice before 1956 was Ferrari; but before that year began *el Chueco* admitted—to the confusion of the experts—that his biggest worry would be the Vanwall.

This must have had more than academic significance to Fangio at 2:10 PM on May fifth of '56, when a cigar-snouted green machine bulked in the mirrors of his Ferrari-Lancia, hurtled screaming past and dwindled down the successive bends of Silverstone. The bulbous tail and high windshield of the new Vanwall hid all but the white helmet and the talented hands of Stirling Moss, having his first competition outing in the car with which he won three major Grand Prix races last year.

In spite of Maserati's official superiority in 1957, that season's sensation was the hard, dominant finish of the English Vanwall team. Three more varied courses than Aintree, Pescara and Monza could hardly be found; yet each event saw a decisive win by Moss and a sleek Vanwall, backed up by his compatriots Brooks and Lewis-Evans. What's more, Tony Vandervell and his tight-knit team are in excellent shape for this year, for reasons which we'll outline later.

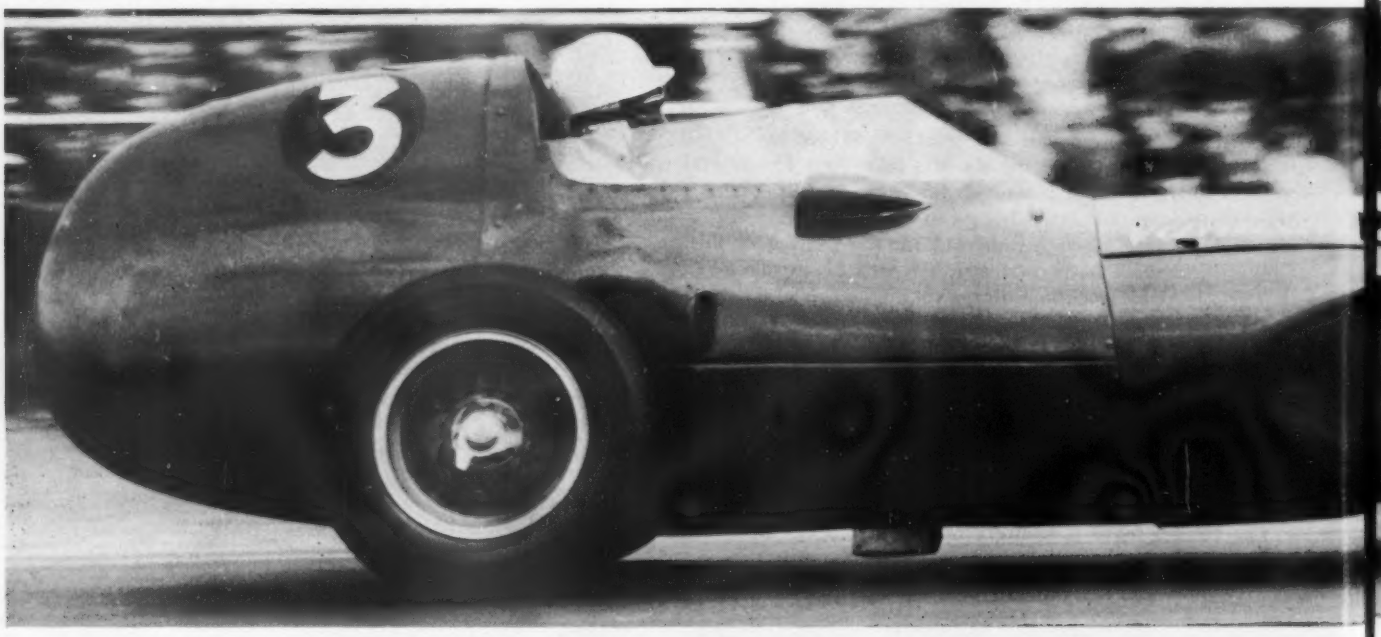
To the best of our recollection the Vanwall is virtually unique among Grand Prix equipment in one important respect. It's built and sponsored by a component manufacturer—Vandervell Products Limited—instead of by a firm with a direct and practical interest in the production and sale of cars. Tony Vandervell's connection with racing dates from 1948, when Ferrari adopted his war-developed Thinwall bearings for the now-famous series of high-revving V-12's. As a result, Vandervell was able to borrow the current blown 1½ liter Ferraris for the British G.P.'s of '49 and '50, and in '51 he became the proud owner of one of the big 4½ liter unblown editions.

Through these and later adventures, Vandervell had no entangling alliances with specific parts suppliers, being of that breed himself. When he needed designs or mechanisms he could go to the brains and factories best equipped to provide them, while his own staff is well up on advanced engine design from fighter planes to motorcycles. When Tony goes racing it's strictly business, in contrast with the "gentleman sportsman" concept of the English team that Europeans have found so amusing for so long. But no longer!

In fact, when Vandervell and his staff finally had a V-12 4½ liter G. P. Ferrari for keeps, they immediately set about modifying this brainchild of Lampredi. By the end of 1953 it had new intake and exhaust systems, new bodywork and fuel tanks and most important – new brakes. Named the "Thin Wall Special", it spent its weekends terrorizing the blown BRM's, and established a reputation as the fastest road race machine ever.

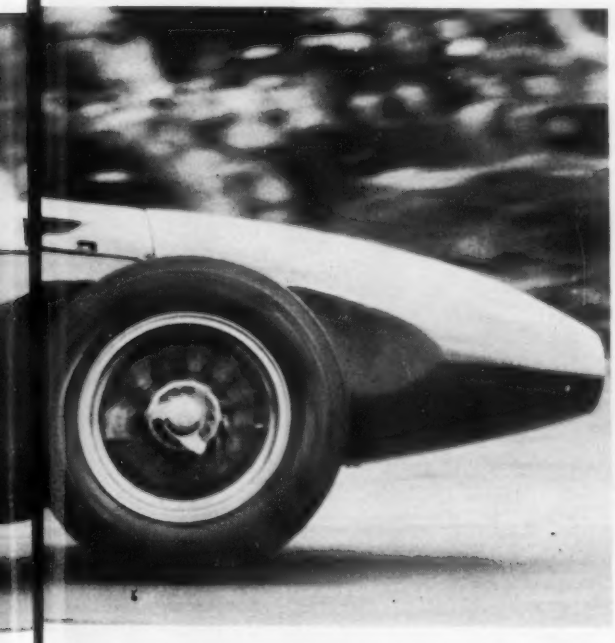
Many lessons were learned on this car, including the value of preparation. A more concrete project was the fitting of Goodyear disc brakes, very Indy-like in their simple single-spot design. An original feature was radial drilling inside the discs for lightness and heat dissipation. Simplified and lightened, these same binders halt today's Vanwall.

With this experience under his belt, Vandervell tightened it a notch and started work on his first original design – intended for the two-liter racing of 1953. At first the team was mainly interested in engine design, so the chassis and drive line were patterned after Ferrari ideas. The frame differed somewhat, being more space-type in layout, but the transverse leaf springs with wishbone front and de Dion rear were very familiar.



So was the gearbox, which like the disc brakes and engine is basically the same as in the 1957 Vanwall. Four speed at that time (a fifth "starting" gear was added in 1956) its shafts were placed flat in unit with and ahead of the differential, both cases being split vertically on the mainshaft centerline. An integral pump supplies pressure oil to the box bearings and the ZF differential, at the same time circulating

Tony's Vanwalls have corner all their own in busy shop, hardly spacious yet neatly arranged. Right, Vanwall's nose tapers to tiny opening whose size was calculated carefully for minimum drag with sufficient cooling. Rest of body equally thoughtful. High tail controls turbulence behind cockpit, deeply dished undertray lowers drag, minimizes effect of side winds by rounding body shape.



Stirling Moss sizzles past the line at Silverstone in Vanwall to set new track record of 100.47 mph, highest race average to '57 on the English track. This was the first time out and the first win for the new Costin-Chapman designed GP car.

it to a small radiator under the water core. More than any other factor, the position and size of this transmission forces the Vanwall's driver up high in the air, and in spite of the fact that it's been nearly trouble-free, this may force a new design for '58.

Breaking away from Enzo's dictum, the rear brake discs were mounted inboard and supplied with air from the sides. Nowadays it's about the same except that the spot calipers are above rather than below the axle shafts.

Nothing mentioned here so far indicates much potential for greatness; in fact it was a year or two behind the times. This was not the case with the powerplant, which is a curious and conflicting combination of antique and advanced techniques. Its fame was practically ensured by its origin, which was the single-cylinder half-liter Norton engine that long kept England supreme in motorcycle and Formula III Grand Prix racing. On a power-per-liter basis it had always been one of the world's great engines, but its efficiency and refinement had inevitably been lost when multi-cylinder versions were assembled. The Vanwall version is horsepower of a different color.

As might be expected the cylinder head layout is very Norton, but the rest of the engine is also astonishingly similar to the cycle one-lunger, too. Chief point of agreement is the division of the unit into three main parts: a high-topped, deep-walled crankcase, a very-shallow cylinder assembly, and a deeply-spigoted cylinder head with separate camboxes and exposed valve springs . . . the whole works bound together by exposed studs. There are a lot of pieces, but each one is (by racing standards) easy to make, inspect, remove, repair and replace. If something breaks the whole engine does not become a gaudy doorstop for Tony's office.

The cylinders themselves are wet steel liners very deeply spigoted into the crankcase and sealed at that point by a flange under stud pressure. Top-end joining is accomplished by a simple radiused countersink in the head. To hold water around the unusually heavy liners a suitably-shaped cast alloy housing is dropped down inside the studs. This housing takes little real stress, acting to steady and seal rather than support.

VANWALL SPECIFICATIONS

POWER UNIT:

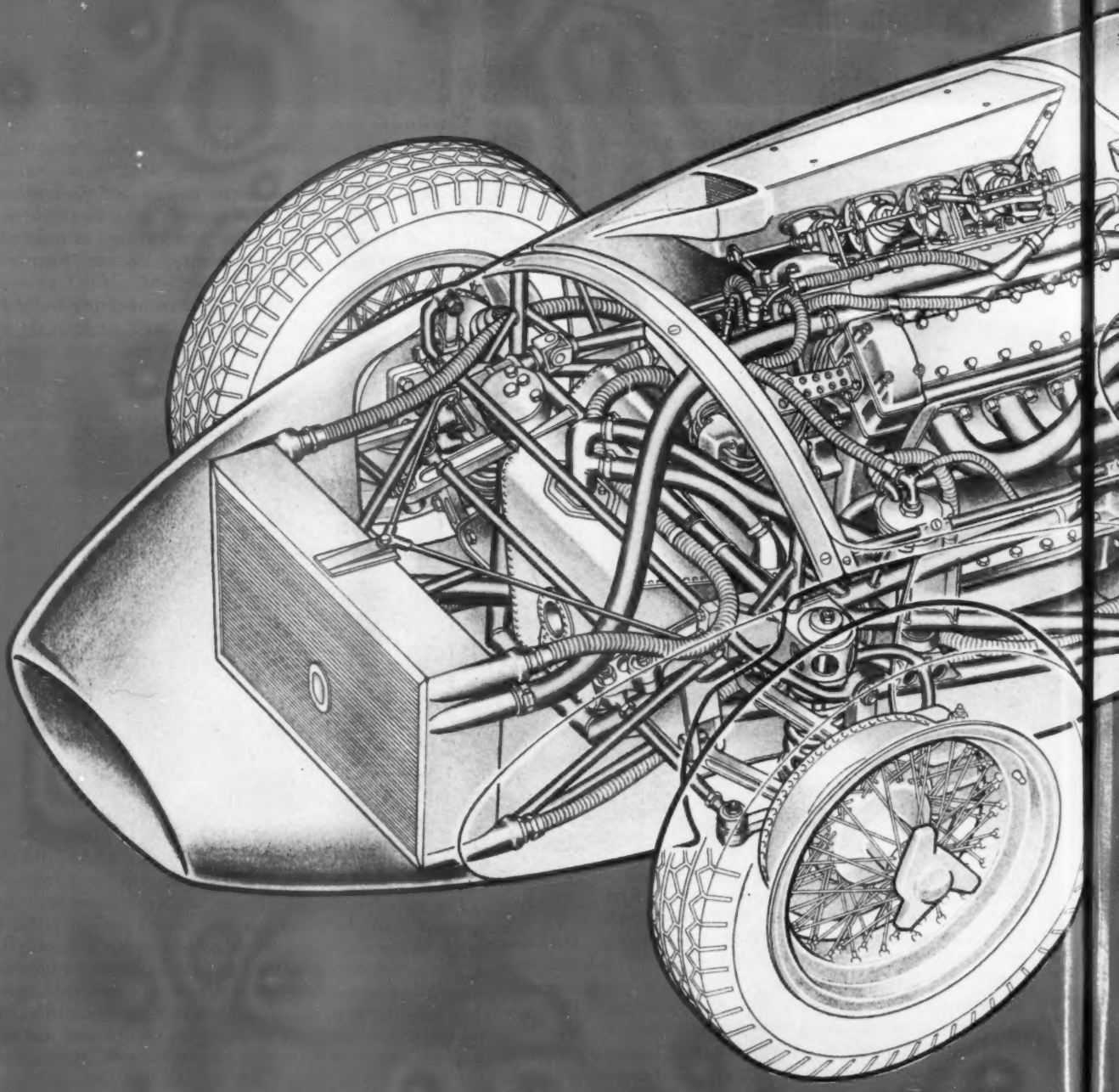
Type	DOHC in-line four
Bore & Stroke	3.79 x 3.39 in (96 x 86 mm)
Stroke/Bore Ratio	0.90/1
Displacement	152 cu in (2490 cc)
Compression Ratio	12/1 to 12.3/1
Ignition by	BTH magneto, eight spark plugs
Carburation by	port fuel injection, Bosch pump, Amal carb bodies
Max. Power	280 bhp @ 7200 rpm

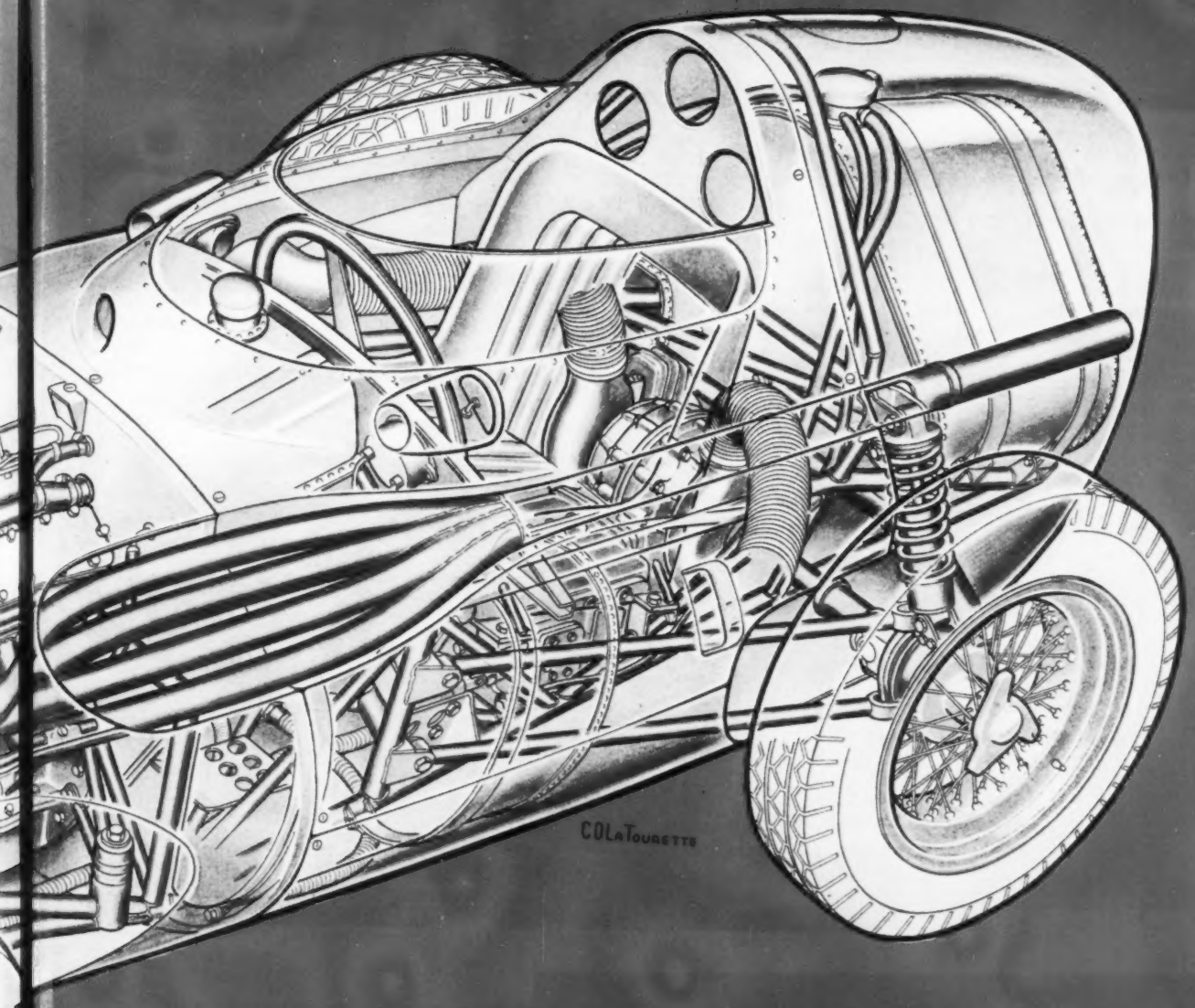
CHASSIS:

Wheelbase	90¼ in.
Front Tread	53¾ in.
Rear Tread	51⅝ in.
Suspension, front	Coil springs and wishbones
Suspension, rear	Coil springs, de Dion rear axle, paired radius rods, Watts linkage
Shock absorbers	Fichtel & Sachs telescopic
Brake type	Vandervell-built self-adjusting Goodyear aircraft-type disc brakes

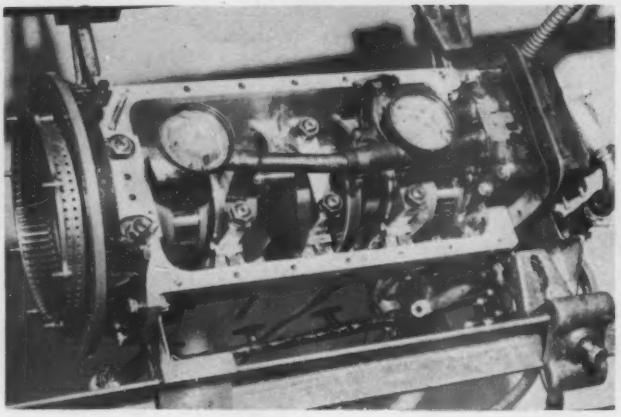
GENERAL:

Height	43½ ins
Dry Weight	1350 lbs
Fuel capacity	69 U. S. gallons

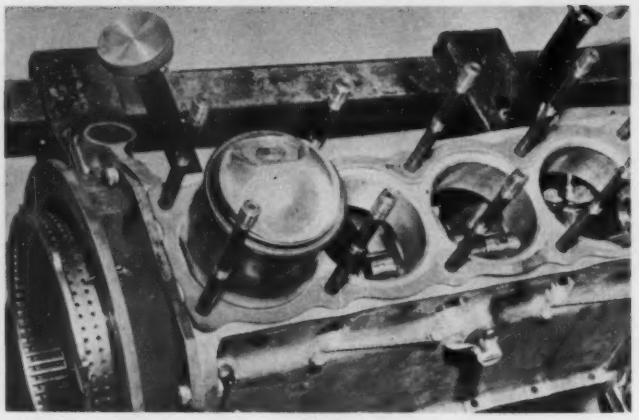




VANWALL-VICTORY FOR '58?



Bottom end of the smooth, deep sided crankcase shows how far down the walls extend below the five-main bearing crank. Twin pickups feed the dry-sump oil system.



Top side of the crankcase. Wet cylinder sleeves and water-containing shroud are held to the crankcase by stud pressure. The whole layout betrays its motorcycle ancestry.

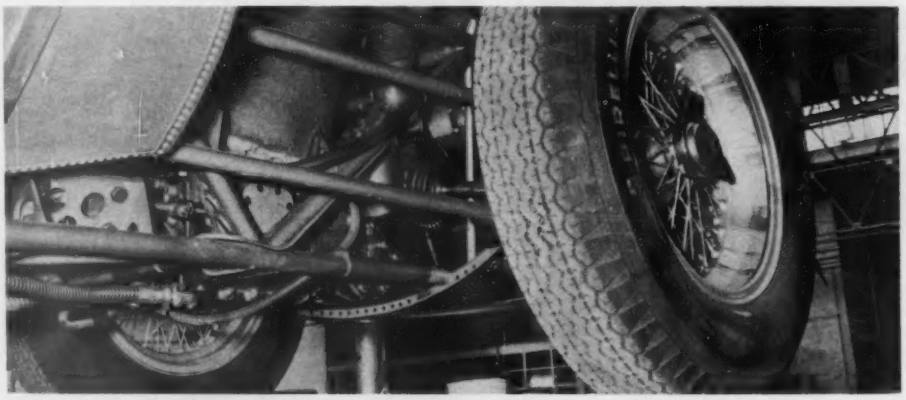
Skirts of the smooth-sided crankcase extend well below the crankshaft centerline, requiring only a shallow sump cover. Plenty of support is provided for the five big mains and the fully counterweighted crank. Also husky are the polished connecting rods, their H-section shanks blending tangentially with the wrist pin end. By modern standards the two-bolt big ends appear small in relation to the bore size, but they certainly seem to do the job.

As an amusing sidelight to this aspect of the Vanwall, we've noticed that any mention of his own cars has been conspicuously absent from Vandervell's ads, while every *other* Grand Prix make has been boosted as a user of the Thinwall bearing – and they do: it's a sound product. This hiatus was filled by the Italian R.I.V. firm, who announced that *their* bearings were used in the Aintree-winning Vanwall! This apparent contradiction is explained when you realize that R.I.V. make ball bearings, which Vanwall does not.

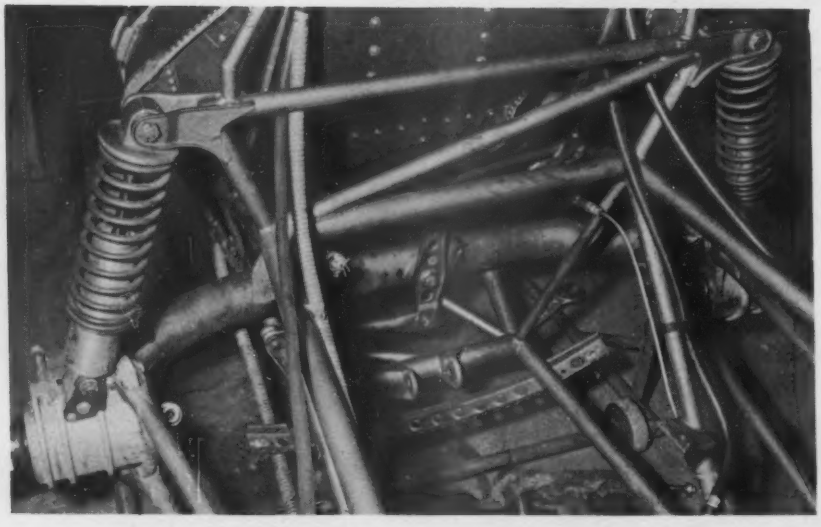
Oil for the dry sump system is stored in a riveted tank ahead and to the left of the engine, while the oil radiator is just above the main core. Flexible hoses supply the big oil filter (on the right) and such specialized points as the injection pump and the two camboxes, which are fed from a block on the right-hand cam tower.

Also betraying their ancestry are the pistons, of light slipper type as used by Norton (and the works Jags, etc.). Two Dykes pressure rings and one oil scraper make up the complement of three rings. The crowns are high and sharply peaked, with deep contoured cutouts for valve clearance.

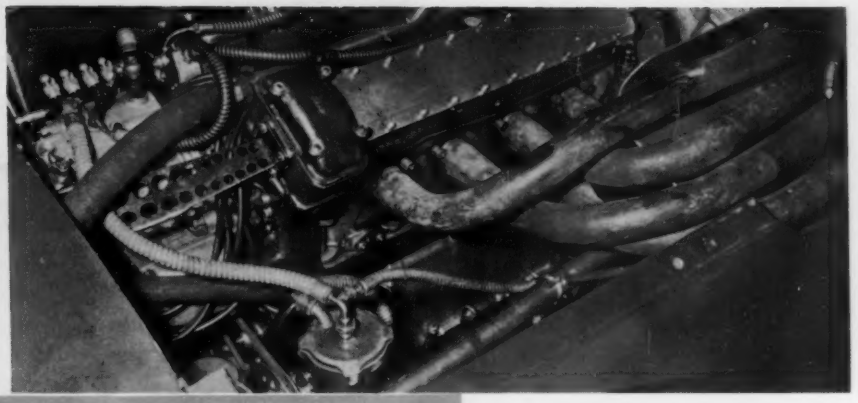
(Continued on page 56)



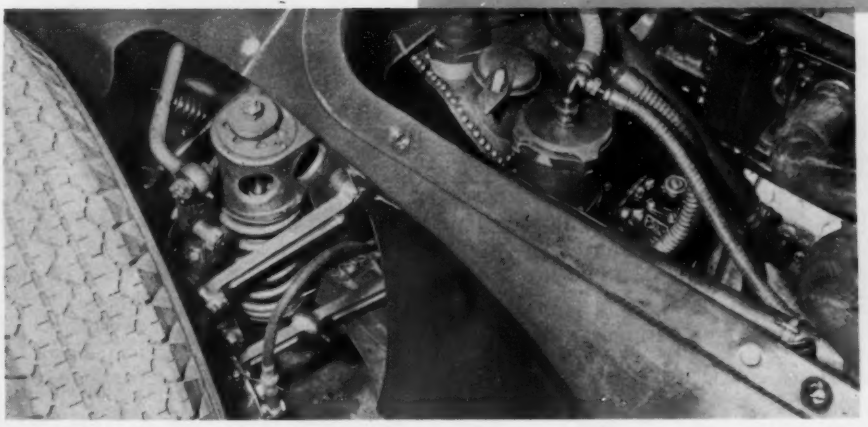
Spot brakes (deep inside) get cooling air from side vents. Air is exhausted upward through low-pressure area in cockpit. Thus the dirty faces.



Original DeDion rear suspension was retained but re-interpreted by Colin Chapman. Lateral location is by simple Watts link rather than sliding block, fore and aft location is by long trailing arms—all very simple. Springing is typical of Chapman designs, i.e., coils and shocks mounted integrally.



Final drive (left) is by meaty spur gear, standard European practice. ABOVE—Basic engine is starkly simple. Deep cam boxes surmount the very short cylinder block assembly. What looks like four Amal carbs is in reality an injector layout. Exhausts are precisely tuned. RIGHT, Cockpit is all business with no frills. Instruments, left to right, are tach, heat, pressure, oil temp.



ABOVE—Front suspension is also by coil springs and integral shocks with unequal length wishbones. Oil tank and cooler at front of engine. BELOW—Unsuccessful Rheims car.

SCI ROAD TEST: THE OPEL REKORD

THE OPEL is made in Germany by GM, designed for the American market rather than the European. Considerably more effort has been put into making the Opel comfortable, roomy and well appointed, rather than just "economy". It could be supposed that a lot of handling and performance had been sacrificed; however, the Rekord is a happy blend that is well suited to either city or suburban driving.

Although the Rekord is not a sports machine, and it seemed a bit unfair to subject it to the same punishing series of tests to which we subject the hotter equipment, we decided to go all out. We drove to Lime Rock, and after two practice laps, set a lap time — with *two* passengers and driver aboard — of 1:41.2. Interesting, because we were stop-watch dicing with a sports car of considerably higher repute and equal displacement, that averaged 1:38.5! More interesting yet is the fact that a good portion of the course was covered with ice — which the Opel took in stride.

The Opel is one of those machines that we can, with impunity, call an understeering car. Negotiating the turns at Lime Rock, we pretty consistently had the wheel at full lock, but the slip angles were so large that we had to back off in order to bring the tail around. If the track had been free of ice, it would have taken us longer to negotiate a lap. As it was, occasional icy patches helped the rear wheels to slide out, kicking out the rear end. But then, understeer is built into American cars: the American driver expects it.

But if you curve below this mush-limit, the Opel is a remarkably solid-feeling car that handles as if it wants to stay on the road. The ride is smooth, and even the jolts of washboard surfaces are absorbed by the suspension and are barely felt by the passengers.

We got a surprise while testing the brakes. Frankly, we expected to make three or four stops, and run out of pedal; but after completing ten stops, the pedal felt fine. So we gave it seven more stops, *for a total of seventeen!* We ground off a lot of lining, but could not completely fade the brakes! The braking efficiency was in the order ⅔ "g", or 70% efficiency, and did not fall off appreciably. Of course it must be remembered that it takes considerably longer for the "Rekord" to get up to 60 mph than it does many strictly-sports cars.

The interior is roomy enough to comfortably seat four adults, though it can carry five or six, depending on the degree of crowding one is willing to endure. The instrumentation is simple, with two lights that serve as ammeter and low oil pressure warning, and two gauges for fuel and engine water temperature.

Some people claim that cars have personalities. If that is the case, the Opel is certainly pessimistic. The fuel gauge on American cars is designed to read, for example, half-full; the Opel tank reads half empty; to do a legitimate 80 mph on an American car, the speedometer has to read somewhere near ninety; we did 78 mph in the Opel with the speedo reading 77 mph: top speed (according to the manual is "approximately 77.67"; we did 78 mph; etc.)

The four-cylinder, ohv pushrod, 1500 cc engine is rated 56 hp at 4400 rpm. Since the engine is oversquare (shorter stroke than bore), the piston speed at maximum power is quite nominal, indicating that the wear rates would not be excessive. We averaged 22 mpg on regular gasoline, but it must be remembered that the car was relatively new and at no time did we ever operate the Rekord in the speed ranges or under the conditions for which it was designed. Unquestionably judicious handling will produce far better mileage.

Price: $1995. In mountainous Switzerland, the Rekord is priced competitively with another popular German car, and it sells with its competitor about equally despite its three speed transmission (which, incidentally, is 3-speed synchro). Apparently it's comfortable enough and pretty enough to compensate for the lack of fourth gear. By American standards, it's a good-handling, pleasantly-styled automobile. By the more demanding driver's standards — the Rekord holds its own.

Len Griffing

Opel "Rekord" is miniaturized Detroiter, complete with soft seats and lots of room. Light atop doorpost is parking light.

On Lime Rock with wheel at full lock, the Rekord mushes, turns slowly. With ice slipping rear out, lap time: 1:41.2

TOP SPEED:

Two-way average	76 mph
Fastest one-way run	77 mph

ACCELERATION:

From zero to	seconds
30 mph	5.7
40 mph	8.8
50 mph	12.8
60 mph	21.6
Standing ¼ mile	21.8
Speed at end of quarter	60 mph

FUEL CONSUMPTION:

Hard Driving	22 mpg

POWER UNIT:

Type	Pushrod ohv in-line four
Bore & Stroke	3.15 x 2.91 in (80 x 74 mm)
Stroke/Bore Ratio	0.92/1
Displacement	90.8 cu in
Compression Ratio	7.5/1
Max. bhp @ rpm	56 bhp (SAE) @ 4400 rpm
Max. Torque @ rpm	84 lb-ft @ 2200-2600 rpm

DRIVE TRAIN:

Transmission ratios I	3.24
II	1.68
III	1.00
Final drive ratio	3.89

CHASSIS:

Wheelbase	100 in
Tread	50 in
Suspension, front	Coil and wishbone
Suspension, rear	Hotchkiss drive, leaf springs
Shock absorbers	Telescopic
Steering type	Circulating ball
Turning diameter	34 ft
Brake type	2LS front, L&T rear
Brake lining area	109 sq in
Tire size	5.60 x 13

GENERAL:

Length	174 in
Width	64 in
Height	59 in
Weight	2000 lbs
Fuel capacity	10.57 U. S. gallons

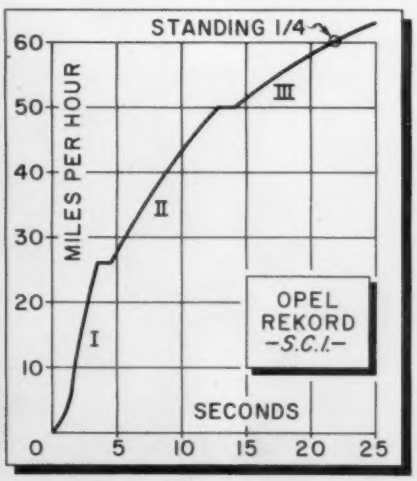
RATING FACTORS:

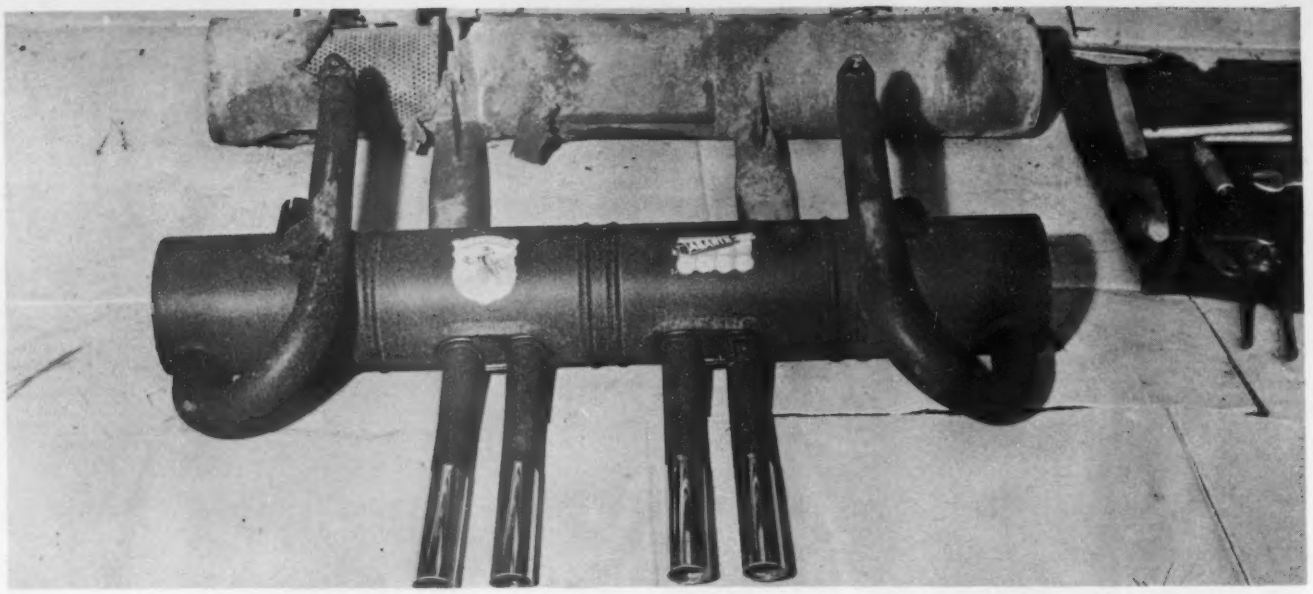
Bhp per cu in	0.62
Bhp per sq in piston area	1.80
Torque (lb-ft) per cu in	0.92
Pounds per bhp	35.7
Piston speed @ 60 mph	1700 fpm
Piston speed @ max bhp	2130 fpm
Brake lining area per ton	109 sq in

The Opel is miniaturized Buick, down to peaked tail lights and side flashing.

Acceleration isn't staggering, but the car's not stressed and is easy to drive.

Unstressed, oversquare 1.5-ohv engine doesn't scream, should last a long time.





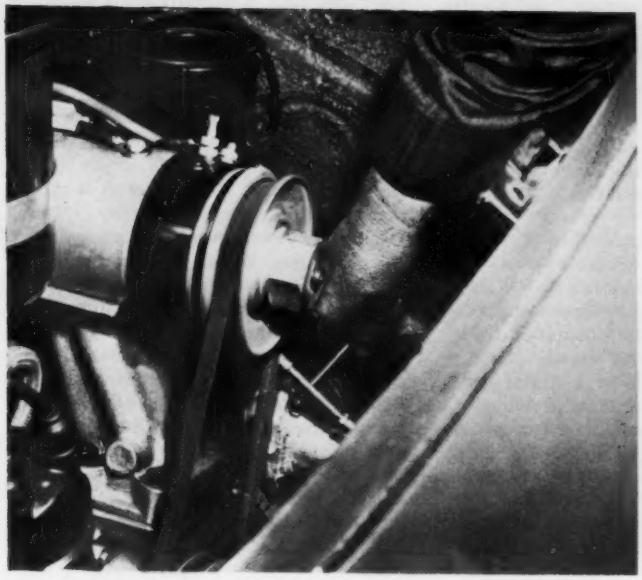
ABARTH MUFFLER

TIMES, AS ANY REGULAR reader of SCI has discovered, have changed. The foreign engine once sacrosanct has been the subject of more variants of the science of hop than the Ford flat-head. And as with the venerable flat-top there must be a beginning, especially for the beginner. The general procedure, unless the operator is a true initiate who knows exactly what he's doing, is to start with the simplest bolt-on modification and proceed from there to more esoteric things.

The first piece of equipment to be bolted on a car, no matter what its make or origin, has as a rule been a new exhaust layout. Almost every automobile manufactured as a production item is woefully deficient in the exhaust, getting rid of, department and opening up the *auspuff* pays off in several ways. Manufacturers of these special systems claim, and rightly, that the treatment adds miles per gallon—in many cases enough to pay for the cost of the system over a period of a year or so if one drives a shade more than the national average quota of 10 thousand miles in the course of a year. A second plus is the pleasure of driving behind, or in front of, an engine that has less tendency to laugh at you at a point somewhere below the rated peak revs.

Up until very recently the one car that has defied all attempts at *legal* modification in the exhaust department was the Porsche. Unless one wanted to go to the expense of a very special custom conversion it was open, competition pipes or do without and run with what the factory supplied. Then along came an Italian gentleman named Carlo Abarth who owns what SCI's London Correspondent Dennis May refers to as a soup-kitchen in Turin, specializing in small cars. He produced a simple bolt-on item that was quickly acquired by Fisher Products in Long Island Cty, N. Y. for U.S. distribution. The Abarth sells for a shade over $40 and does a job—what's more it can be bolted on by any Porsche owner with a modicum of mechanical aptitude and the tools that come with the Porsche. We know—we checked by doing the job on a staff member's car in his back yard. For picture purposes, however, we went to a shop (Walter's Auto Repair, Jamaica, N. Y.) where there was a hoist since it is none too easy to operate a camera under a car when the working space is crowded with greasy handed editors. The procedure is the same in either case and the hoist is unnecessary unless it happens to be handy and free. #

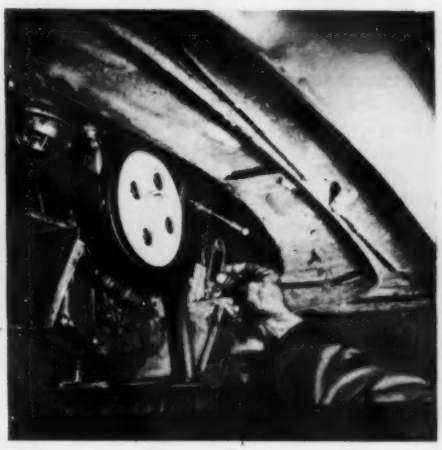
The first step is to remove the splash pan at the rear of the engine compartment as at left. Next, if car is fairly new, douse lower clamps with oil and remove clamp bolts. If car is old and clamp or pipe is rusted as it was in picture at right, a saw will be necessary. Pipe to old muffler may be cut but do NOT cut exhaust pipe. Have spare clamps handy!



With splash pan removed, upper muffler flanges are accessible. Carefully remove nuts from studs. If stud comes free, separate from nut and replace. Do not try to use a capscrew.

Using a rubber mallet, tap the old muffler gently at either end until it drops free from both pipes and upper flange studs. Be careful not to damage or burr the studs in any way.

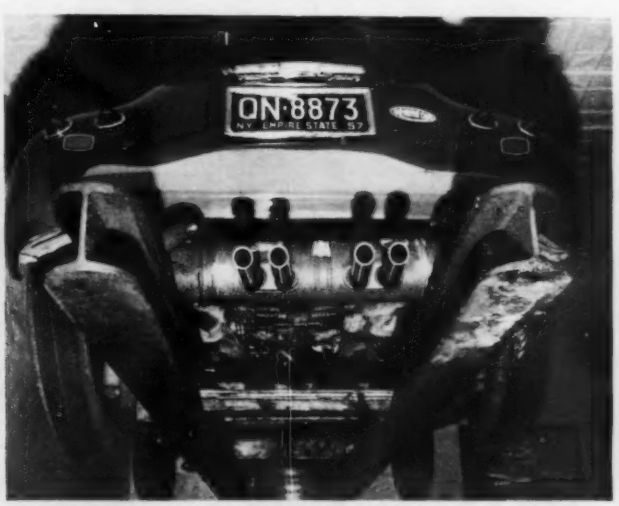
The Abarth has a crackle finish which must be scraped from the flanges to make sure of perfect gas-tight seal.



Scrape any traces of carbon from the flange pads and install NEW gaskets using silver paint as a gasket seal.

Place new muffler under car and insert lower pipes slightly. Then lift and place upper flanges over studs.

Gently tap the new muffler forward at either end until it fits snugly over pipes and against flange gaskets. In some cases flange holes may have to be enlarged to fit over studs.



Cinch down the flange nuts and tighten the muffler clamps over lower pipes. Then replace the splash shield and you're in business. The total job shouldn't take over an hour or so.

NASSAU SPEED WEEK took place for the fourth time early last December, with over 100 cars invited to compete in the 14 scheduled events and a variety of things different from last year. For one thing new three-and-five-mile circuits were laid out on an airfield abandoned only six weeks before and the events were substantially more international. Drivers such as Olivier Gendebien, Joakim Bonnier, Peter Collins and several entries from the Latin-American countries joined Stirling Moss, Phil Hill, Carroll Shelby, Masten Gregory and a horde of lesser-known American drivers who had already discovered the pleasures of post-season racing in Nassau — admittedly for no money prizes, but all-except-food-expenses paid for the chosen few. There was a gap caused by the absence of Fon Portago, who had competed at Nassau every year; he was missed even by people who had never known him — perhaps most of all, by a large number of natives who were sure his famous number "13" brought them luck and money. (The number has been permanently retired at Nassau.)

The Week of Speed was a bit different this year, too, though still filled with parties. The early birds, arriving on Saturday, November 30th, were able to practice on a three mile course, used the next day for the opening races. A ten lap opener for cars of all classes (and definitions) was followed by the 34 lap, 102 mile Nassau Tourist Trophy Race. The former was won quiet handily (53 seconds) by Curtis Turner (NASCAR) in a Corvette SR-2. His only serious opposition was Jim Jeffords (USAC) in a similar car which broke its rear axle on the 8th lap, permitting von Kaesborg (M-B 300SL) to move up to second. Jim Orr, in a superbly tuned and very neatly driven AC Bristol, finished third, and Dick Thompson (Carrera) fourth.

One hour later came the big stuff. Masten Gregory with Scuderia Buell's big 4.7 Maserati (larger liners in a 4.5), Richie Ginther in John Edgar's much-used 4.9 Ferrari, Stirling Moss in a borrowed-from-the-factory 3.7 Aston-Martin DBR2, Johnny von Neumann in a brand new, sparkling handsome 3.0 Ferrari (which is evidently the newest new-look for sports-racing machinery), Olivier Gendebien (Belgian winner of the 1957 Tour de France) with Buell's Testa Rossa, Lance Reventlow in his new twin-cam 1.5 Cooper-Climax, Curtis Turner again in his Corvette, plus some 30-odd other machines lined up on the grid for the start of the Tourist Trophy Race.

The newly prominent and, as it turned out, deservedly praised young Mexican brothers, Pedro (17) and Ricardo (15), were out to be seen by most Eastern U. S. drivers for the first time.

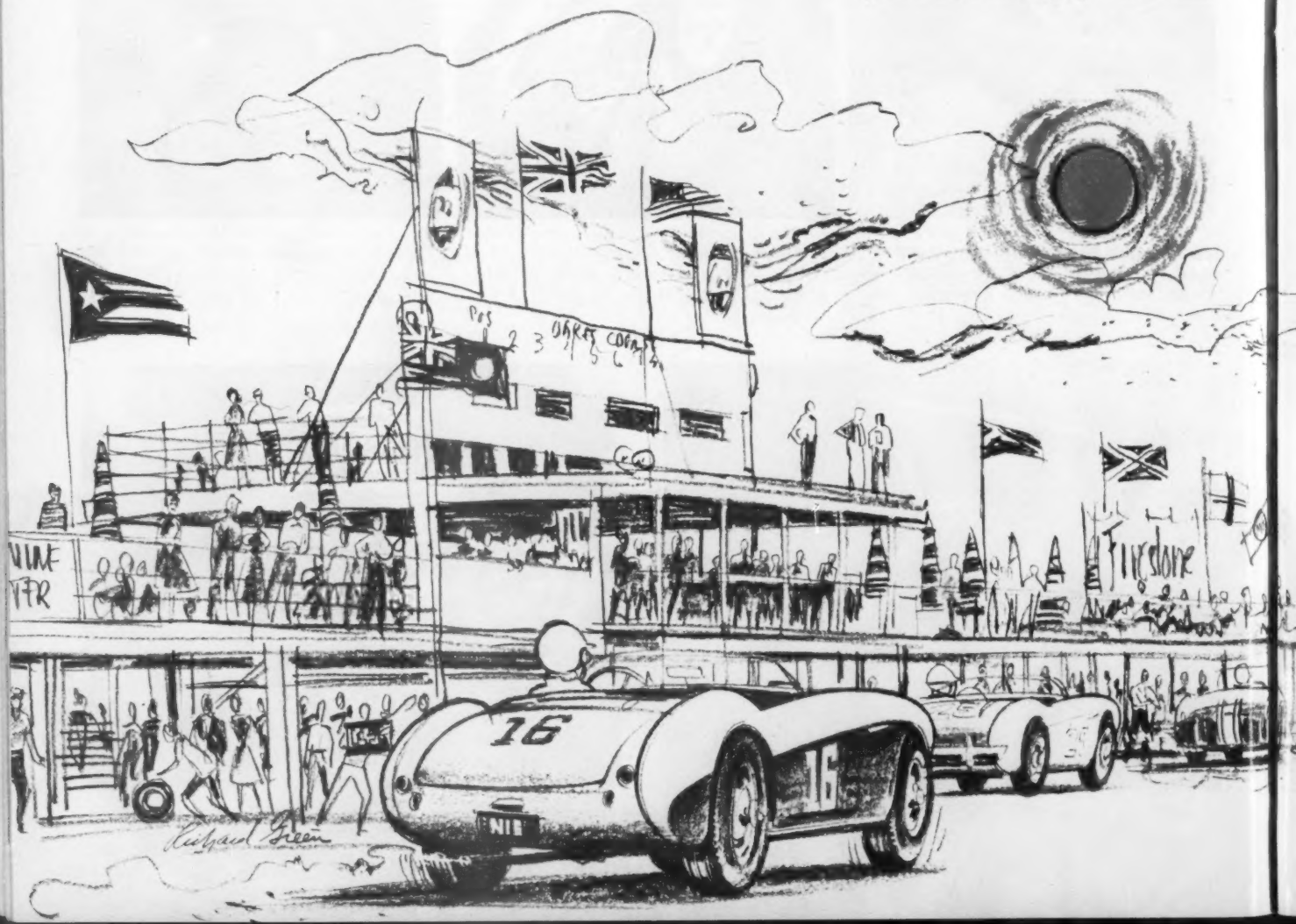
When the flag fell, Masten Gregory put his foot in it, to take a flying lead, quickly followed by Moss and Ginther. It was apparent that Moss's Aston was no match for the other two. Moss maintained second for four laps then was passed by Ginther's Ferrari. Moss dropped slowly back until, on the 17th lap, he was forced into the pits by persistent misfiring. He and Aston-Martin race manager, Reg Parnell, stood impatiently in the pits for long minutes before the mechanic could locate the obscure distributor short (a centrifugal advance spring broke, and a tiny fragment lodged next to the breaker points, shorting them out). Some eight laps passed before the car got back on the course.

By this time, the winning positions were fixed, Ginther laying a quarter-minute behind Gregory until four laps from the end when he was slowed by traffic in the turns. Paul Goldschmidt's (NASCAR) dropped out when his Lister-Bristol lost its oil, and John Fitch's new two-liter Maserati retired again with its recurrent valve trouble. Gregory and Ginther were the only cars to finish all 34 laps, both of them lapping an odd little Fiat Special nineteen times in the progress.

After the races Sunday evening (the last of the events, was in semi-darkness), a few people settled down to some serious mechanical work to get cars back in shape for the following weekend, but the majority went back to their complimentary hotel rooms and dressed up for the "freebee" cocktail party, entertaining pleasant thoughts of some serious beaching during the next few days.

The next morning made it apparent that there was to be none of the latter.

Monday was chilly, grey and altogether great weather for sleeping — which most



everyone did for the next few days. A few roused themselves sufficiently on Tuesday to welcome the twenty or thirty cars, drivers, mechanics and families that arrived on the morning boat from Miami. And along with a general rear-axle changing (preparatory to the next weekend's events to be run on the five-mile course), there were the usual handful of panel beaters, engine tuners and gear-box rebuilders puttering away at the hanger.

Things got underway again on Thursday with mandatory day and night practice on the longer course. Well, "got underway" is a slight exaggeration, for Thursday was what might be called "Nassau Day" — the day when *everything* gets thoroughly loused up.

As if a flag marshall shortage wasn't enough, when everything was ready to go, about an hour and a half late, a water wagon ran over the main communications line.

So off they went, finally, to find that a last minute change in the five mile course had shortened it to something closer to 4.5 miles, slower than expected but still *very* fast. The course, in most places, was so immensely wide that there was slim chance indeed of finding a right line through many of the corners. The airport is surrounded by marshy land and low, scrubby bushes; where the scenery began and the road ended was exceedingly hard to determine in the getting-on-toward-dusk light. Spins were not infrequent.

Night practice was held after an hour rest, but long before that, most of the drivers had realized that on a course with such poorly defined edges, surrounded by such desolate country, there wasn't much sense in running at night. After practice there was a driver's meeting. Bill Smythe, Clerk of the Course, suggested a re-scheduling of start times on Sunday which pleased (or appeased) everyone. Late into the night, a frantic amount of gear ratio changing was going on, the "five-mile" route not being exactly what had been expected.

There were three 5-lap heats early Friday afternoon for the two-section Governor's Trophy Race. Though the racing was keen, the entries were not representative, as it was not necessary to qualify for the final sections. Class winners were Naylor (Sadler), Shelby (Maserati), von Neumann (2.5 Testa Rossa), Fitch (Maserati), Crawford (Porsche RS), Dietrich (Elva) and Hanna (D.B.).

In the first section of the final, cut from 20 to 15 laps, Crawford and Ricardo Rodriguez finally came to grips, making it quite a race. Crawford led off, Rodriguez passed on the second lap, Crawford repassed on the third, and then the experience of the 27-year-old Chicagoan became obvious. Although Ricardo drove smoothly and with great skill, Crawford continued to inch ahead, the race with a 45 seconds lead. Bob Said, apparently re-oriented by the previous weekend's race, proved that all his enthusiastic talk during the past two years was not just blather—he drove Hellburn's old and much-tested Testa Rossa (fitted with Chinetti's newest 2.0 engine) to a decisive third overall and first on handicap, though behind two 1500 cc machines. The handicap, reasonably enough was based on previous best performance in class rather than displacement, thus insuring that it would not go automatically to a Porsche pilot.

Very late in the afternoon, the second section of the race roared off the grid. Moss and Turner got off first, but the combination of Phil Hill and Tilp's Caracas-winning 4.1 Ferrari immediately proved their superiority over the rest of the contenders. Masten Gregory was never more than a few hundred yards behind Hill in the early laps, but Hill's driving was flawless, his car running perfectly and his lead never really in question. Having lost water on the starting line, Turner retired on his third lap while eighth. Moss held on to third spot in the obviously slower Aston-Martin till halfway through the race when Shelby passed him in Edgar's 4.5 Maserati. Ginther, Bonnier, von Neumann and Rod Garveth followed behind Moss — an order which did not change. Hill began to draw ahead of Gregory at about this time, piling up a substantial lead — fortunately, for on the last lap, less than a mile from the finish, he blew a tire. He was able to keep control of the car and was still moving at around 80 mph when he crossed the line, still a safe nine seconds ahead of Gregory.

Came Saturday — Island Race, Ladies Race, a bunch of five-lappers for *marques* — generally a dull-sounding, hiatus-for-the-big-boys sort of day. To the contrary: it is agreed by all who were there that *the* most exciting races of the whole meet were the two five-lap heats of the Ladies Race. Denise McCluggage and Ruth Levy (co-drivers at Caracas in Denise's RS Porsche), the latter having borrowed the 3.7 Aston-Martin from Moss, put on two duels which were utterly unbelievable. Throughout the first heat, Denise's Porsche repeatedly slipped by the bigger car in the corners and Ruth just as repeatedly re-passed with her faster car on the straights. Denise finished ahead by about an RS-length.

In the second heat, Suzy Dietrich flipped her husband's polished aluminum Elva far out in the scrub-brush country; uninjured in the process, she earned the title Miss Reynolds-Wrap of Nassau. But on the last turn of the last lap, Mrs. Levy pushed just a *little* too deep into the corner, couldn't make it, and flipped the Aston. She was thrown out, but unbelievably, also was not injured. Stirling's car was, somewhat, and this was to have a major effect on the next day's racing.

The excitement was some small consolation for the mass of Ferrari and Maserati drivers who had sat around the track all day for their 5-lap events — which were finally canceled for lack of time. The second heat of the Island Race was postponed to start Sunday's already busy schedule.

Complex negotiations were affected Saturday evening, and resulted in Jan de Vroom renting his 3.5 V-12 Ferrari to Temple Buell. He, in turn, loaned it to Moss. He won the 100-mile preliminary Sunday noon so easily that it embarrassed him.

Moss, apparently not the least bit winded by the 100-mile sprint, relaxed for 45 minutes or so, then ran-not-walked to his car in the LeMans start of the 250-mile concluding event of the meet.

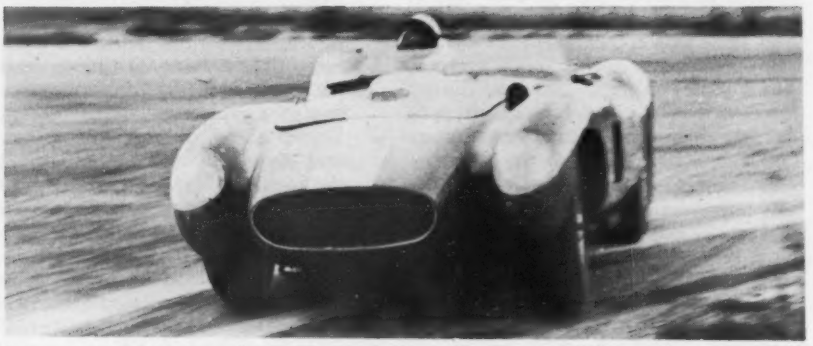
The first laps were as close racing as anyone is ever likely to see, Gregory, a blazing first away from the start, Turner a This-can't-be-the-CORVETTE second, followed by a pack consisting of Hill, Carveth, Bonnier, Ginther and Moss. Turner dropped back quickly; the others got in line — perhaps ten feet apart through the turns of the first lap. Shelby, slow away initially, caught up quickly. By 3½ miles out, Gregory was sliding through the turns with Hill right on his tail, Moss right on his, and Ginther, Bonnier and Shelby clumped together in the same fashion only a few yards back.

Moss made his move on the third lap, passing Hill. Then two laps later, he passed Gregory, holding the lead for three laps. Then Gregory re-passed to stay in front until he took the Maserati into the pits on the 13th lap with a gearbox on the verge of seizure. Hill held a tight second, and Shelby moved up past Ginther to harry him. Up to this point, all four cars were never separated through the turns by more than a few yards. With Moss a few hundred yards in the lead, Shelby got by Hill on the 18th lap — it being apparent by this time that the 4.1 Ferrari which had responded so flawlessly to Hill's fine direction in Friday's races was not going well. Hill had

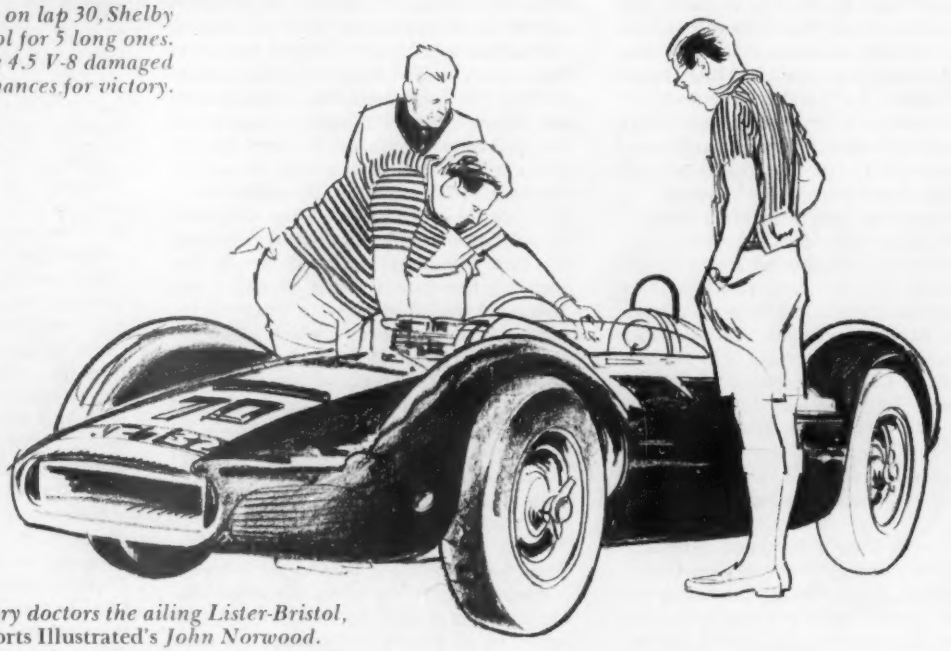
Nassau 1957

by D. M. Bartley

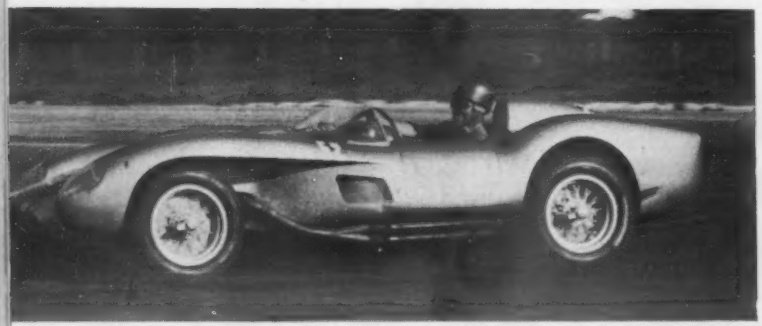
After quick 33 second stop on lap 30, Shelby was held by traffic control for 5 long ones. Impatient revving of the 4.5 V-8 damaged clutch, costing him his chances for victory.



Moss points the aggressive 3.5 Ferrari's "new-look" nose right up the camera's lens.



Freddie Kingsbury doctors the ailing Lister-Bristol, looking on is Sports Illustrated's *John Norwood.*



When von Neumann remained faithful to his old 2.5 for Friday's 5 lapper, Richie Ginther took boss' new 3 liter out for airing, docilely followed him home by 25 seconds, 19 ahead of Naylor.

Many hands make light work. Rodriguez's car, 1 of dozens aboard, emerges from S.S. Florida.

Fantastic, furious, but hardly feminine. Denise McCluggage won as Ruth Levy finished a mere RS-length behind.

"Local boy makes good." Moss, now building a home in the Bahamas, scored two wins.

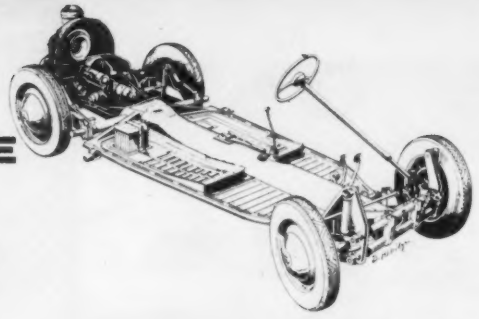
Carroll Shelby, well-known Dallas dealer, held lead after Moss' 60 second stop, dropped back to second as clutch slip slowed him.

Bob Said showed that his loud talk is not hot air, winning Governor's Handicap impressively in early model (but late-engined) Testa Rossa.

Despite post-practice promises, the finish of the 250 mile race took place a good half hour after sunset.

TURN TO PAGE 60

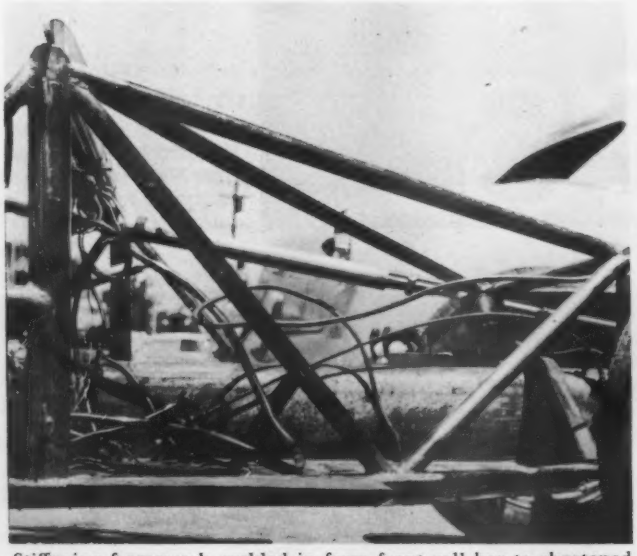
SCI HOW-TO FEATURE



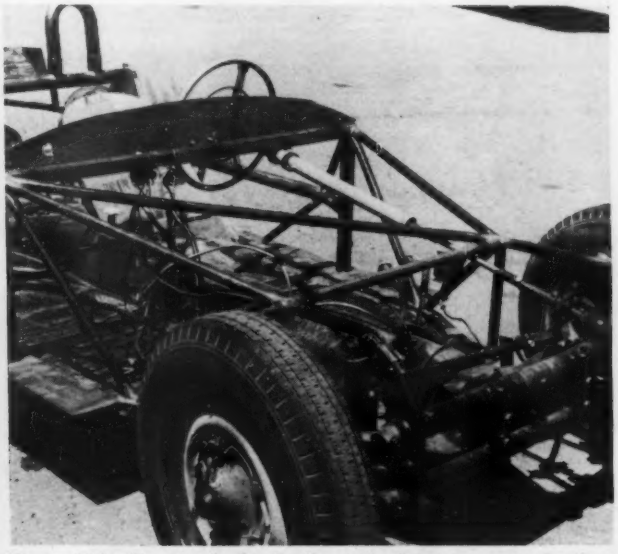
BODY FOR A BEETLE

VW – Devin PART III

by Bob Behme



Stiffening framework, welded in from front roll bar to shortened shock mounts, is made of one inch, 20 gauge tubing. Steering column is lengthened with a welded-in ⅞ inch dia. rod. Bolts are optional, definitely aren't up to the job on their own.



To avoid fouling the body, the front shock mounts must be shortened. This will require shorter shocks; early model VW ones will do the trick. Keep the shocks vertical.

The forward auxiliary framework must be removable so that the body may be slipped on. The upper portion bolts to the front shock absorber mount; the lower to a flange welded to the frame.

In the Devin-VW, the driver sits lower and further back than before. Buckland laminated his "imported" seat-back to the floor with cloth and resin. Remove seat rails, make seat cushion to fit.

With the driver's seat moved back, you will want to move the shift lever, too. Buckland decided on twelve inches aft, but didn't shorten the lever as many stock VW owners do.

Cut two equal patches from the top of the tunnel. Swap their positions after modifying the shifting rod.

Shorten shifting rod 22 inches, ten for the chassis chop and 12 for moving the shift lever. Braze its end fitting back on.

Guide for shift rod is already welded to inside of tunnel patch. Cutdown rod won't reach frame's nose for normal removal, so it must be inserted before patches are rewelded in place. Grind the weld smooth unless you plan to carpet the interior.

(Continued on page 62)

EYSTON

(Continued from page 29)

a record in itself. His single-engine Bonneville car, *Speed of the Wind*, was unique in its field by way of front wheel drive; if it survived today, which it doesn't—the Luftwaffe laid an egg on it during the war—this one would still, I fancy, be the world's fastest pull-instead-of-push car. *Thunderbolt* was the only L.S.R. contender ever built with more than four wheels (it had six—or eight if you count double for the twins at the back). *Flying Spray*, which was actually *Speed of the Wind* fitted with a Ricardo deisel engine, was the sole British candidate for world's-fastest honors in the C.I. class; it held this record, with a kilometer speed of 159.1 mph, for many years. Also, the 24-hours mark set up prewar by Eyston's Chrysler-A.E.C. oil burner, 97.05 mph, has never yet been beaten. In the early 30s, George was a jump ahead of Fred Dixon in adapting Riley sixes to take a separate carb per inlet port; he disclaims inventor's rights in the idea, however, recalling that it originated on Millers in the U.S. earlier still.

Eyston, unlike many of the best brains in the race and records business, wasn't self-taught. He had a formal education in mechanical engineering at Cambridge university, immediately after serving with distinction in the British army throughout WWI. But nature equipped him with something that perhaps has served him better than whole libraries of book learning ever could: a receptive mind, a venturesome angle of attack on technical problems, and a readiness to heed and profit by the experience of others. In the company of people with even modest pretensions to engineering authority, or authority on any subject on earth for that matter, he has a characteristic way of listening absorbedly with his head tilted slightly to one side . . . and "not saying much."

The f.w.d. car, which, like *Thunderbolt*, was designed in outline by George himself, served as a laboratory for several experiments in the distinctive and unconventional Eyston idiom. One of these, perpetrated late on in the life of *Speed of the Wind*, took the form of a big nose fin, angled at about 8 deg. to the longitudinal axis. Combined with suspension biased to tilt the whole car a bit off-keel, dirt track style, this "sail" enabled George and his Bonneville partners to drive hands off, or merely by resting their hands on the wheel while describing ten-mile circles at better than 165. Another time a start was made grafting a small auxiliary deisel onto *Flying Spray* for the sole purpose of powering a supercharger. This exercise, although technically feasible and promising, never actually went into action on the salt.

Although some of Eyston's blueprints were, to say the least, bold, he never was in danger of developing into a dreaming abstractionist. On the contrary, his feet stayed firmly planted on the ground. Proof of his high rating in the eyes of unimpressionable authority was given when the British government released to him the V-12. Ricardo deisel engine used in *Flying Spray*. This engine, built in unit with a gearbox designed for front drive, was one of only three or four that ever were constructed, and mere money couldn't buy them. What they cost the taxpayer, history doesn't record. Output of these big sleeve-valvers was surprisingly low at around 300 bhp. The unblown Rolls Royce Kestrel engine used in *Speed of the Wind* gave about 100 horsepower more.

Standouts among the many world records set at Bonneville by *Speed of the Wind* were Eyston's 159.3 mph for one hour in 1935, and the 12-hours mark he and Denly shared in '37—163.68 mph. The fact that the 1937 average for a full day was 4 mph up on the 1935 speed for a single hour is a remarkable testimony to the heat of the competition in this era, with relentless mutual pressure maintained between the Eyston and Cobb crews on the one hand and Ab Jenkins on the other. These relative speeds and durations point up the virtual unburstability of the slow-revving Kestrel.

A copybook on pitwork could have been written around the Eyston camp's feats of legerdemain in Utah. Denly recalls, for instance, that twenty-seven seconds usually sufficed for changing all wheels, refueling, and getting rolling again with the take-over driver aboard. The sensation when turning ten or twelve mile circles at 160-plus with front-wheel drive, says Denly, was unlike anything else imaginable—almost as though the back wheels didn't exist and you were balancing, quite effortlessly, above the single pair in front.

Pit routine was always organized and drilled by Eyston himself, who from his earliest days in the game had schooled himself in this craft and the kindred art of team management with almost priestly zeal. Latterly, of course, his skill has been periodically exercised in Utah on behalf of BMC's serial expeditions, culminating last August with the fine job of mothering he did when EX181 and EX179 toppled Class F and G records. The last time George played an itinerant role in record breaking was in 1954, the year he and Ken Miles co-drove EX179 at Bonneville to average 120-plus for distances and times up to 2000 kilometers and twelve hours. Back then, the car was running with an unblown MG engine. George's days of record breaking are now over, he says. It isn't that his sixty-one years are weighing unduly heavily—he just feels he shouldn't stand in the way of younger men, that's all.

The Eyston-Denly association, which was to become one of all time's most potent forces in record breaking, originated by pure chance. At Brooklands one day in 1930 George was doing a marathon tire testing job for Avon, driving one of his Bugattis. In mid stint, somebody flagged him in to attend to an urgent business matter. Anxious not to break the continuity of the tests, he buttonholed Bert, who happened to be doing nothing in particular on the sidelines, and asked him to stand in. He did. Although long famous as a racing motorcycle rider, Denly had never driven a fast car in his life. He nevertheless gave satisfaction in the elementary chore of wearing Avons out, so other part time commissions for Eyston ensued. The following year George hired him permanently, and thereafter he stuck with The Skipper, as he invariably calls him, right up to the war. When peace returned and Eyston became a Castrol director, the first thing he did was to call Denly and put him on the Castrol payroll in their engine test department. He's there still, and still accompanying The Skipper to such faraway destinations as Bonneville whenever an opportunity occurs.

If anybody ever cast a slur on his boss in Denly's hearing, it is predictable that Bert, who stands about five feet high, would climb on a chair and hit him in the navel. That is the sort of loyalty that Eyston, with his unfailing kindliness, courtesy and straight dealing, inspires in people who work with him and for him. With one home in England and another on Park Avenue, New York, George's circles of acquaintance in the two countries are about equally large. Tall, broad, and white haired, and with a fast, long-striding gait, he is a familiar figure at such U.S. speed venues as Sebring, Watkins Glen, Elkhart Lake and Turners Field, at all of which he acts as a steward when his New York sojourns happen to coincide with races.

Of all the cars Eyston ever raced, perhaps the most self opinionated was the straight-eight Panhard, a lofty, narrow single-seater somewhat resembling a grandfather's clock laid on its side. Powered by an eight litre sleeve-valve engine that may have been the only one of its kind ever built, the Panhard twice broke the world's hour record, among many others, in George's hands. Possessed of a titanic understeer, this car had to be dissuaded by brute force from beelining over the Montlhéry bankings each time around. Denly recalls that the preliminaries to long duration records on the Panhard usually included a program of physical training. The Skipper, who had rowed for Trinity College in his Cambridge days, would go sculling on the Seine. Denly, formerly an amateur boxer of some attainments, would knock hell out of a punching bag, alternating with marathon runs and walks. In the result, their bouts of combat with the Panhard always produced a draw, though sometimes only just.

As well as breaking records on it, George drove the Panhard in Brooklands races, the most memorable being the 100-miler around the Outer Circuit which in 1932 inaugurated the British Empire Trophy series. This resulted in practically a photo finish between the future rivals for the L.S.R., Eyston and Cobb, the latter driving the 10 litre Delage on which René Thomas had held the land record in 1924. The judges gave the decision to Cobb—by one fifth of a second. Then Eyston, claiming he'd been inadvertently baulked in a wheel-to-wheel approach to the finish line, protested to the stewards and got the verdict reversed. Cobb in his turn had the matter referred to the Royal Automobile Club, who put the reversal into reverse and declared John the winner after all. It was typical of George's benign nature that, so far from going away and griping under his breath, he signified his satisfaction with the R.A.C. ruling by standing Cobb a little celebration dinner . . . and thus ended The Great Who Wunnit.

(Continued on page 50)

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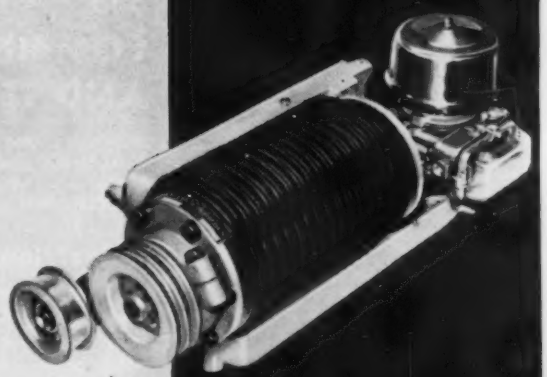

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EYSTON

Two years later, after the British Empire Trophy had been made over into a synthetic road race, run on a *chicane*-bedevilled circuit at Brooklands, Eyston really did win it, driving his Magic Magnette. This time, due to the fact that George's pit crew either hadn't kept a proper lap count or weren't sharing their intelligence with The Skipper, he was quite unaware of his position when they flagged him off at the end. It took quite a bit to convince him that he'd won. This skepticism was really understandable, because he'd always had a hoodoo on him in Brooklands classics; once he was beaten into a third placement in the Two Hundred by a fifth of a second, and twice he cracked up and had to retire after leading the Five Hundred at three-quarter distance.

Eyston, sportsman and man of science, was always something of a poet, too, with a tendency to relieve the materialistic grind of a records campaign by rising at 3 *a m* and tramping to some preselected vantage point to watch the sunrise and listen to birdsong.

Orderly and conscientious by temperament—he is, for instance, never late for an appointment, and hates other people to keep him waiting—he seldom took an uncalculated risk during his speed career. A possible exception, though, was the time at Montlhéry when his Chrysler-A.E.C. deisel, fitted with a modified sedan body, broke one of its chassis side members during a 24-hour record run. The breakage occurred six hours from the end, and George optioned to keep on going and see what happened. With the sound girder flexing like a hula dancer's backbone, the propshaft gradually sawed its way through an adjacent crosstie. Then the body panels, unaccustomed to a stressed skin role, started buckling into pleats. But the Chrysler, driven in shifts by Eyston and Denly, never did fold up and the schedule was adhered to, the record duly falling.

Between about 1927 and 1954 inclusive, George's personal score of world and international records, including shared bags, was almost certainly the biggest by any Briton. If his totals were outstripped by various Frenchmen—and they were—this was because Eyston, unlike these French mass producers, was only interested in *breaking* records, as distinct from establishing ones that nobody else had hitherto bothered to establish (e.g., 59 days at 58.28 mph by Marchand and friends with a Citroen sedan in 1933, a mark that presumably stands to this day).

Aside from his Utah exploits, George's association with MG produced the most colorful and technically-significant chapter of his whole records career. It remains to add that Eyston's initiative was directly responsible for the MG company's entry into the records field. In fact, if he hadn't propositioned them when he did, in the sense he did, it's quite possible their prewar contribution to autosport might never have gone further than running a few lightly modified stock cars in minor Brooklands races.

The train of events, very briefly, was this. Back in 1929, Eyston conceived an ambition to acquire, build or adapt a car that would be capable of traveling faster on 750 cc than anything hitherto. The short records, mile and kilometer, in international Class H were currently held by a Frenchman called Ratier, with a car of his own design and construction. First, therefore, George took the logical step of finding out whether this Ratier could and would make him a seven-fifty to lick the Ratier. M. Ratier tried, but the deal never came off. Next, Eyston was attracted by an idea propounded by Ernest Eldridge, a friend and business associate of his, for downscaling an 1100 Riley engine for the same purpose, and hanging it in a chassis that Parry Thomas had built for one of his 1½ litre Thomas Specials. Well, this didn't come off either.

Then George happened to cross paths with one Jimmy Palmes, an old Cambridge buddy of his. By a lucky and fortuitous piece of timing, Palmes was at that moment busy sleeving down an 850 cc MG Midget—his own property—to 750 cc, his plan being to use it for an attack on the Class H 24-hours record. Intrigued, Eyston accepted Palmes' invitation to move in on the conspiracy, and between them the pair enlisted the enthusiastic support of Cecil Kimber, the head of MG. Gradually developed beyond recognition, and with a potent aid to poop in the form of a Powerplus blower (which George and his technical associates had designed four years earlier), this formerly undistinguished Midget grew up gracefully into the world famous EX120. Among other highlights of its sensational career, EX120 was the first seven-fifty to exceed both 100 mph and one hundred miles in one hour. Its immediate successor, EX127, vulgarly styled the Magic Midget, was also built to George's order, and with it, at Monthery in 1932, The Skipper set a further Class H landmark by beating two miles per minute for the first time. Afterwards, you may remember, it was acquired by Bobby Kaulrausch, the German, in whose hands it jacked the 750 mile record to 140.6.

Denly a truly great trackman, made Montlhéry history on EX127 by being the only driver ever to win a 200 kph lap badge on less than 2 litres. This local record still stands. As a further but unrelated example of Bert's mastery of the art of rapid ring-o'-roses, on *Speed of the Wind* at Bonneville he once turned five consecutive laps of the ten-mile circle with a maximum variation of two-fifths of a second; this at over 160 per. So great was the discrepancy in size between Eyston and Denly that, when taking over the big front-drive from his chief during stage stops, Bert always had to have the Skipper-size seat removed bodily and a special uplift pew substituted.

Although automobile history has Eyston typed as a records man, his circuit race activities and successes were by no means paltry. In the mid to late 20s, for example, he won the Boulogne GP des Voitures Légeres and the Grand Prix of La Baule, driving various Bugattis. Alfa Romeo's concessionaires in Britain picked him to handle their stuff in such classics as the TT, the Irish GP and the Brooklands Double Twelve, while in 1929 he shared second placement with the then-famous Boris Ivanowski in the Belgian 24-hours

(Continued on page 52)

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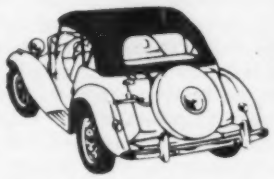

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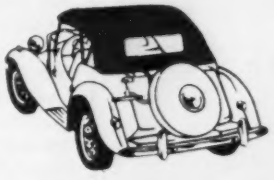

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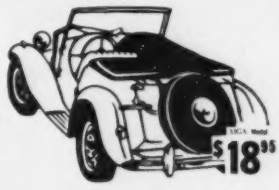

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By Marion Weber

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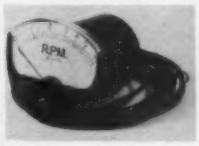

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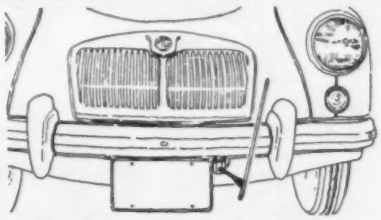

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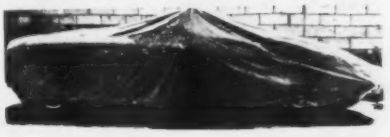

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EYSTON

race at Spa. As we saw earlier, he won the British Empire Trophy at Brooklands on his own Magic Magnette, which afterwards formed the nucleus of Goldie Gardner's 200 mph streamliner, EX135. In 1933 at Montlhéry, George finished third on a 2.3 Alfa in the French Grand Prix, a month or two after winning his Mille Miglia class for MG in partnership with Count Johnny Lurani. The Eyston-Lurani Magnette formed one third of an Abingdon task force that copped the Mille Miglia team prize; Earl Howe, who was another of the MG team members on this occasion, had rather astutely entered his own blown Merc independently (a fellow named Penn-Hughes drove it) and loaded it to the lid with Magnette parts in case of emergencies en route. On paper, Penn-Hughes was in the act to race, but *de facto* his job was to nursemaid the Magneticians. They didn't, as it turned out, have any need for his wares, Eyston for his part having learned during training, by the traditional M.M. process of driving through railroad crossing gates when they were closed, that it's worth waiting until somebody opens them.

Although, unlike Segrave, Campbell and Cobb, The Skipper never reached for the water speed crown as well as the L.S.R., he has always had a toe in the other element, either on the technical, sporting or commercial levels. In youth he served an apprenticeship with Britain's biggest marine propellor makers; in the early 20s he quit car speedwork for a couple of years and raced hydroplanes instead; and he is currently a director of John I. Thorneycroft Ltd., the international marine engineers, whose weightier preoccupations include repair work and refits for the *Queens*.

Unwittingly, it was a famous American racing driver who first infected young Eyston with the itch that led him, by a long and adventurous road, to Utah and the Land Speed Record; and this, in light of the part that Americans and the U.S. scene were to play in his subsequent fortunes, was somehow prophetic. In 1921 he went to Le Mans to spend a vacation with friends and to brush up on his French. Ranging the Sarthe countryside one day, his contemplation of nature's glories was interrupted by the sight and sound of a car approaching along a little frequented stretch of die-straight road. It was a sight and sound that, even in George's mind, gave nature and her glories some stiff competition. From a blue-chinned mechanic, waiting at the roadside with tools and equipment, he learned that the goggled demigod crouching over the wheel of this flying projectile was Ralph de Palma, doing tests on his Ballot for the imminent French Grand Prix.

Eyston, as he pobbled back to Le Mans in his old two-cylinder GN, was a thoughtful fellow. Less than two years later, the seed de Palma had unknowingly sown was bearing fruit. First, with Brooklands neither sitting up nor taking the slightest notice, he drove a prewar *Coupe de l'Auto* Sunbeam there. Then a 4½ litre Vauxhall. Then an ex-Zborowski GP Aston Martin. After that, the Bugs and the Alfas and an OM and a thing called a Halford. G. E. T. Eyston was on his way!

Dennis May

PLYMOUTH FURY

(Continued from page 21)

poised and perfectly balanced throughout the curve, maintaining secure adhesion far beyond any speed most motorists have ever attempted in cornering or ever will. Because the Fury can be wound out to an actual 85 mph in second gear, top gear can be used at Paramount for just a few seconds on the short main straight, and the rest of the course is negotiated in the lower cog. In tight, slow hairpins the Fury refuses to break loose at either end under really savage acceleration. Remarkably enough the Fury combines this cornering ability, this extreme road-safety factor, with an exceptionally comfortable ride.

(But the acid test of handling is to take an automobile and drive it over a thin layer of freshly-frozen sheet ice at comparatively high-speed. The New York and Connecticut parkway system is at best adequate, if the temperature is in the fifty-to-seventy range and the area is about four days removed from precipitation. Under any other conditions you're better off at home.)

We took the Fury that we were testing on the East Coast out on a road just like this and drove it for three hours. We made it a point to sustain the posted speed (posted for clear weather). The Fury clung to the road like it was part of the concrete, even on sharp turns and steep hills. Only once did it tend to lose traction on all four wheels simultaneously, and we had to push the car to make it slide even then. Recovery was immediate.

Perhaps instrumental to this excellent handling was the judicious use of the One and Two buttons of our Torqueflite transmission. Descending a hill in the number Two gear allows the Fury to hold a constant speed without brake: the number One button halts the car gently but firmly, even on a sheet-ice downgrade. This option is well worth the money.

All of which goes to prove that as well as being *very* quick, fierce and endowed with a savage, brute power, the Fury is *safe*. And unless you're over eight feet tall and one day removed from the heat of the Sahara, you'll be as comfortable as in your own drawing room.

But the car is not perfect. Our number one criticism is aimed at its brakes. These follow the near-universal Detroit trend of decreasing adequacy. Hauser faded them out almost totally in one fast lap at Paramount and they behaved poorly in our standard ten-stop fade test, after which they retained a permanent chatter. Although identical to those on our '57 Fury test car, they performed worse because they were punished more severely. Our only other important criticism is one that applies to nearly all current Detroit production: the package is irrationally large.

The new Golden Commando engine has everything in torque, in pulling power, that last year's power plant lacked. While the former engine performed downright dully at low engine speeds, the new "B" or Golden Commando power unit has a remarkably flat torque curve from its 3600 rpm peak down to very low revs.

(Continued on page 61)

MGA

(Continued from page 25)

jets and K.W. needles. If richer needles are indicated use R.F. and if leaner operation is wanted K.W. 1 needles will do the job.

The big jugs should be mounted with neoprene gaskets and double-coil spring washers under the nuts, which should be safety wired. The gasket is also a catalogue issue piece bearing the designation AHH 5791. No air cleaners are supplied with these and it's unlikely they'll be wanted but if they are send the carb number to any large U.S. speed shop and they will probably be able to supply the cleaners. This final operation in the Abingdon stable is worth 88 bhp at 6000 rpm.

STAGE 5

The MG people do not list this stage but from certain catalogued parts, a bit of experience and items available from some of the better knotfarms in the U.S. it appears that there are still more horses that can be fitted under the MGA hood. This last series is only for the strong of heart and experiment-minded. It has not, repeat, NOT, been checked out on the Abingdon dyno and has no official blessings from Mr. Enever. Let's explore the possibilities anyway.

First let's take a close look at the catalogue. There we find part number 1H 1025 which is described as a hard-face Bright Ray exhaust valve. H-m-m-m. A little farther down the list are part numbers 1H 1111 and 1H 1112. These are heavy-duty valve springs, inners and outers respectively. Getting interested? There's more — an oil cooler kit listed as part number ARH 0088. Abingdon says that the special valve springs will raise the point of valve bounce to 6400 rpm but the company won't admit to more power — just sustained power. The other items are interesting chiefly from the point of view of keeping the thing together at continued high speeds.

This being the case maybe we can rifle the till just a little further. Let's look at that cam for a bit. The hottest cam available from the parts bin is the one which comes stock with the car. This has a .357-inch lift and a 252 degree duration on both intake and exhaust. While we know that not much more lift can be tolerated, we also know that American cam grinders don't consider anything under 270 degrees much in the way of duration unless valve acceleration is very rapid which it isn't in this case. Several of the better cam grinders have MGA grinds worked out and others will work out and tailor a cam to your needs. Among the former is Ed Iskenderian and among the latter are Ed Winfield and Racer Brown.

There is probably a very good series of reasons why MG didn't make a hotter cam available, most of which center around the awful exhaust layout and a time element since they've been busy with other things. We'll sympathize over the time problem and go on to the exhaust.

The problem here is that the center two exhaust valves feed into a siamesed chamber and port. However the outlet is pretty robust and we might even be able to cheat about 1/16 of an inch in size. This way we can treat that port the same as we used to do with the center two on the earlier block, running that into a balance box at a point just under the fire wall. The outer two are run together and thence to the balance box. True, the results won't be quite as good as the same ideas applied to a four-port but it'll be one big improvement over the stock manifolding. Any good header system would.

Alright — the factory says 6400 rmp can be had with the special valve springs and stock valves. That fact has been tested. We also know that any lightening of the valve train will pay off in a raised float point. That too has been proven for years. As a starting point take the pushrods. When you select your balanced set use the lightest one as a standard. Next, take your valves to a *good* machine shop, preferably one that specializes in speed work and have the man undercut the valves. But *carefully* — if you remove much the service life will be shortened and the strong springs may tend to tulip them. If you are patient and dexterous, the final piece of work can be polished (not ground down) rockers. The minute amount of metal ground off in the polishing will not make too much difference but in a way such things are satisfying. In any event the lightest pushrods obtainable and the undercut valves should allow engine speeds above 6500, possibly even within an ace of 7000 rpm depending on the cam selected.

With such a range of engine speeds cam selection becomes a matter of "what do you want to use it for?" Limits of good sense should apply with an upper limit or peak speed for a full-race conversion coming in about 6500 rpm tops, leaving any extra bonus for inevitable over-revving during those times when the chips are down in the final laps of a race. With the cam and exhaust modifications listed, added to the full Stage 4 layout it would be advisable to run richer needles than the standard K.W., the R.F. pins being about the right starting point. Since there are no factory test figures available here it would be best to use a mixture analyzer to check the effects of the better scavenging afforded by cam and headers and if any error is to be made let it be on the rich side.

Regarding this last part — our own Stage 5 — the authors wish to point out that this is meant only to point a direction and individual advice should be sought from *competent* professionals in your area or among the special parts makers regarding individual problems. Further, unless you are really gone on racing, serious racing that is, it would be best to stick with the proven factory modifications since these as we've said, have been tested not once but often.

As with the full house XPEG, the all-gone MGA has a lot more urge than the stock machine and as a result there is considerable added strain on the driveline. The anonymous oracle at Abingdon has foreseen these difficulties and has as usual

come up with the answer in a choice of new clutch springs or a complete new clutch assembly. The springs are standard after engine number 16225 and have a pressure range of 180/190 lbs. Their part designation is 1H 1024. For the full treatment, though, there is part number AHH 5457, a special competition clutch which is a pretty fierce item but one that will take everything you can put through it with the hopped-up B-type engine.

GEARING TIPS

At long last the factory will publicly admit that they can sell the close ratio gearboxes used in the EX182 LeMans cars. A few of these gearsets have come to this country but they seem to have been held pretty close to the vests of the distributors and dealer-sponsored cars. Now they're a catalogue item. The specs on this box read:

Third gear: 1.27 to 1, Second: 1.62 to 1, First 2.45 to 1. The following parts are needed to rebuild your gearbox to these ratios:

1H 3297 Clutch shaft
1H 3298 Countershaft drive gear
1H 3299 2nd speed mainshaft gear
1H 3300 3rd speed mainshaft gear

In addition to these, there is a range of six rear end ratios giving ratios of 5.12, 4.88, 4.55, 4.30, 4.11, and 3.9 to 1. The last two are newly available. As with all the B-type BMC rear end set-ups the rear end gears are housed with the ring, pinion and attendant bearings in unit in a readily removable housing. Assuming you have enough money to make things really easy, you can pre-assemble gear sets and have what amounts to a semi-quick change rear end. It's a pretty expensive way to do things but it works.

The foregoing operations, at least after Stage 3, add up to a bit more than their counterparts applied to the earlier engines in dollars but MG has made it easier by cataloguing a number of parts that had to be made up for the early engines. The additional cash involved is made up for by the ease of purchase and the bolt-on quality of most of the operations. Also a mite more GO is on tap for the later engines when things are carried through far enough — more power is available for a reasonably tractable street machine than was available in the full race conversion of the XPEG although the earlier engine could be twisted somewhat tighter, 7000 rpm and more being available when desired.

As the man said: "You pays you money and you takes you choice."

John Christy & Dennis May

NEXT MONTH

SEBRING — PRE-RACE

speculation by

STEPHEN F. WILDER

SCI TECH EDITOR

VANWALL

(Continued from page 37)

The exact shape is determined by more than mechanical requirements, though, many years of development having gone into this combustion chamber design. A prime Norton feature retained by the Vanwall is angling of the intake ports to give more turbulence. Also, toward this end, some portions of the pistons and chambers mate to give modest "squish" areas.

Reduced to its essential functions, the light-alloy cylinder head is a very compact spiky-looking casting with virtually no excess baggage. It's cooled by water from a cowl-mounted header tank and a fully ducted Marston cross-flow radiator. Cooler water comes in low at the left of the cylinder housing, while the hot fluid rises through a manifold between the cams. Coolant temperature at this point seems to be only slightly less important than engine revs in preserving the Vanwall engine, judging by the sizes of the instruments concerned.

All the equipment for opening the valves is housed in Elektron castings which are bolted to the block and head and which deliberately contribute little to the strength of the entire engine. A train of gears rises at the front, with one idler twirling the single BTH magneto which supplies sparks to two KLG plugs per cylinder. Each of the two overhead cams spins in its own case under the cover of a flat plate and a multiplicity of cap screws. Eight studs with supporting flanges hold each case a short distance above the head, with the valve stems also extending up to be capped by short cylindrical tappets guided by the cam cases. This follows the Norton exactly, as does the use of twin hairpin-springs for each valve, placed out in the breeze. In car design this recalls vintage practice, which is nevertheless vindicated in the Vanwall by separation of stresses, light weight, and excellent cooling.

Like the ports the valves themselves are very large in diameter, and have deeply-tuliped and highly-polished heads.

From the first the Vanwall designers adhered to the tuned-exhaust pipe length determined by cycle experience, their exhaust extension being simply a collector to get the *auspuff* away from the driver. However, some additional extractor effect is given by the exact arrangement of the joining wyes.

For 1954 this unique four-barrel was fed by four Grand-Prix-type Amal carburetors, their slide throttles raised by four quarter-pulleys and cables pivoted from a shaft along the intake cam cover. Two Amal float chambers were used, suspended from rubber diaphragms, and big bell-mouthed stacks smoothed out incoming air flow.

Before the '55 season, a far-reaching step was the installation of a Bosch fuel injection pump. Placed just above the magneto, it's also driven directly by the camshaft gear train, and its outer end is supported by a drilled strut from the left-hand cam-gear tower. Each injection nozzle is anchored by two studs to a head passage which opens on the intake port just upstream from the valve seat. The injecting spray probably bounces off the back of the head and the stem of the intake valve. For a long time fuel piping to the nozzles was by metal tubing, resulting in a lot of embarrassing vibration-induced cracks and failures at dramatic moments (as when Moss was leading at Syracuse last spring). Finally, an aircraft-type flexible hose was found for the job.

The Amal carbs and their control system were retained, as a handy way to get slide throttles, but of course they don't feed fuel. An additional lever arm, pull-rod and shaft system regulates the Bosch pump output in proportion to throttle opening. Use of this simple yet effective injection rig, originally developed for Vandervell by ex-Norton engineer Leo Kuzmicki, is the key to the high output of this engine. Until the rest of the Grand Prix world reads the handwriting that Mercedes chalked boldly on the wall well over three years ago, the Vanwall will retain a fundamental advantage which it can increase still more by switching to direct cylinder injection.

For Uncle Tony and his team 1955 was a sporadic season at best. Feeling that he was not accomplishing much as a breaker of throttle linkages and injection pipes, Mike Hawthorn went back to Ferrari in the middle of the year. These detail faults were determined and rectified through regular race entries, and the power matched anything Italian. It was too much, in fact, for the chassis, which didn't surprise the Vandervell staff.

To keep the machine rolling for 1956, the Specialists were consulted. Harry Weslake, England's resident expert on gas flow, took over the detail development of the engine, while Daimler-Benz and Robert Bosch provided useful hints on the art of methanol injection. Most important, Tony placed his entire chassis and body design problem (a weighty package) in the talented hands of Colin Chapman and Frank Costin — creators of the Lotus sports car. Frankly these gentlemen were not then familiar with the speed spectrum ranging up from 120 to 190 miles per hour — at least as related to automobiles — but they were endowed with good sense and a willingness to learn.

Chapman's contribution was the distribution of components and the creation of a lightweight chassis to hold them together. The frame is a very deep space-type assembly of a few moderate-sized tubes (main ones 1¼ inches in diameter) placed to do the maximum amount of work. A stressed drilled sheet low at the front keeps the old Vanwall coil and wishbone assemblies rigidly aligned, while a pyramided cowl structure accepts the high bending stresses at the center of the car. With all attachment brackets the latest frame balances 87½ pounds.

The steering box is placed high next to the right-hand front suspension group, and attacks the wheels through a three-piece track rod. Extending forward virtually parallel with the wheels and inboard from the knuckles, the I-section steering arms give negligible Ackermann effect. The Vanwall's steering is almost disconcertingly light as a result. Ball track rod joints are by Thompson.

De Dion rear suspension was retained, but completely reinterpreted by Chapman. The parallel trailing arms were lengthened and repositioned, and a Watt's link system used for lateral location. Wheels were given strong negative camber, to increase "bite" on the outside. High above the hubs a slim five-leaf spring was transversely mounted between rollers (as is now common) to increase stiffness in roll.

From the first, brackets were provided for the anchoring of coil spring and shock units, which were installed for good at the end of 1956. Lots of research during 1957's practice periods, including some valuable days at the Nürburgring, minimized this layout's teething troubles: front wheel patter and a hesitant transition to the "Grand Prix Slide." Many detail changes, an important one being a switch from Armstrong to German Fichtel and Sachs shocks, allowed Moss to fling the Vanwall around like a Cooper at Pescara.

Frenchman Maurice Trintignant is if anything shorter than Moss, and when he first tried on a Vanwall at Monaco he was dismayed at having to look *through* its high curved windshield. He was no happier when told that its height determined the volume of air that was drawn over the rear brakes, and thus couldn't be changed. This is typical of the taut, rigorous way in which Frank Costin integrated a body with friend Colin's chassis.

One striking feature of the standard open-wheeled Vanwall's aluminum shell is the thorough attention given to underbody streamlining. Other cars have long featured useful belly pans, but we suspect that the deep curve of the Vanwall's underside helps prevent power-wasting pressure buildups between the car and the pavement. Combined with the topside shape, it should also reduce the effects of side winds.

Ducting is ascetically simple. A trapezoidal hole lets air down through a mesh screen into the fibreglas (once aluminum) air box shrouding the Amal intake stacks. Cockpit vent scoops are built into the rear view mirror housings, while radiator air finds its way out to the low-pressure areas at the front suspension openings. The fully-shielded cockpit diverts buffeting winds and is a big plus in driver comfort, but drawing the hot and dirty rear-brake air up that way causes Moss, Brooks, Lewis-Evans *et al* to act as filters for outgoing lining and disc dust, and explains their chimney-sweep complexion at the end of a long grind.

The main 39-gallon fuel tank is stashed in the tail, strapped to a triangulated frame extension. Two 15-gallon auxiliaries are slung outboard on either side of the cowl, with heavy flex hoses to join the three at a selector valve on the right of the cockpit. A big fuel filter and pump are mounted at the engine left-front, and are belt-driven from the crankshaft nose.

Early Vanwalls had impressive but overbearing engine-turned dashboards, which have given way to a more livable flat-black finish. Instruments are tach (either 8000 rpm Jaeger or 9000 rev Smiths), oil and water temperature, oil pressure and fuel pressure. Gear lever is handy at the left, emerging from a simple gate atop a massive cast housing. A tiny handbrake is at the right.

(Continued on page 58)

VANWALL

The smashing Silverstone debut of the "new" Vanwall is now history, as is their brilliant speed during 1956 and their outright 1957 victories against Italy's finest. During '57 Vandervell froze the basic design of his cars, and assigned his designers the advanced task of creating specialized editions to suit particular circuits, as Mercedes had done in 1955. One example was the pug-nosed Monaco team cars, complete with nerfing bars (the year before two Vanwalls had retired prematurely, their long snouts dented during early-lap infighting and the cooling suffering as a result).

Most outlandish Vanwall machine, though, was the Reims "streamliner." Costin must have had a ball with this assignment, for he brought forth a highly-original interpretation of a racing car. Front wheels were fully enclosed by sweeping fenders, pierced at the nose by three intakes for brakes and engine. A curious clamshell-like lid capped each rear wheel. The impression was of a vehicle that might easily become a potent sports car if its builder willed it — though this is not likely, at least in that form. Evaluation of the Reims variant was made impossible by confusion over gear rations and engine power; but frankly it did not seem to be a success.

As we write, Vanwall plans for 1958 are not finalized, but the big problem for all G.P. entrants will be conversion to 100 octane gasoline. Other things being equal, the most successful gas-fuelled car is usually the one with more cylinders (and thus smaller combustion chambers, which can swallow higher compression ratios without preignition). The Vanwall, with four barrels, thus looks bad next to the V-8 Ferrari and V-12 Maserati.

Two big factors will stand in its favor: Vandervell's great familiarity with fuel injection, and Weslake's long experience with Jaguar's sports/racing cars. There's already a striking similarity between Vanwall and Jaguar combustion chambers, and it may be more marked soon. No, even without a new engine they can't be counted out.

Chapman has now experienced the new challenges of the super-speed ranges, and is rumored to be at work on a lower, more compact toy for Uncle Tony. If so, it will be built with the detail care and fine finish shown by most Vandervell machines so far, and nothing will be spared to service and repair it properly.

From this humble seat we can't predict the Vanwall '58 fortunes, but if, as strong rumor has it, a canny old Argentine seer appears on the premises, with helmet in hand — well, that'll be *their* turn for the Championship, that's all.

Karl Ludvigsen

TRIUMPH TR3

In order to determine just how well our TR3 handled, we then took it racing (against the clock) at Lime Rock. When we drove through the gate, we were somewhat perplexed to find that part of the track was covered with *snow;* nonetheless we had a crack at it.

The steering is very quick, and when cornering at low speeds there is a tendency (or a need) to straighten the car out a bit after it's been committed to a line. However as the speed picks up, this necessity seems to disappear, and tracking is quite easy. It's a stiff-feeling wheel, with no play and very little return, but it feels good regardless of vehicle velocity.

We ambled around the course a few times, and on one turn a combination of road ice and driver enthusiasm sent the tail out a little too far. Fact is, we spun. But the important thing is that we spun *flat* — it never even came close to going over, and we always had it under control even when it was out of shape. And despite the biting cold weather, the heater kept us comfortable.

The interior is finished in leather, with rubber mats on the floor. It's a lot easier to get into this TR3 than it was last year, because real, honest-to-goodness twist handles have been placed on the outside of each door (ever close the doors with both curtains snapped shut?). There is a large range of seat adjustment, enough to cater to anyone under seven feet tall. The seats are soft, bucket-type, placed so that there is plenty of elbow room.

And there's also room under the hood to get at and work on the engine. The plugs are in the open, as well as the SU's, carb linkage, battery, hydraulic fluid etc. When we completed the first of our high-speed runs over the SCI course, and turned around for the return, the engine developed a terrible miss. The Tech Editor raised the hood, located the trouble, and secured the hood within one minute. The trouble was in a carb dash pot that had loosened. He didn't even need a light.

There is one thing about the car that we complained about last year, and we will have to pan again. The exterior of the doors are curved surfaces, however the mating surfaces of the side curtains are flat. The result is that the surfaces meet only at the center, allowing cold air to channel onto the back of the neck. We made the car very comfortable by stuffing two wool mufflers into the gaps, however it seems a shame that Triumph couldn't either have curved the side curtains to the contour of the door, or installed a simple piece of insulating rubber.

On the other side of the ledger, the things that impressed us most was the excellent quality control at the Coventry works. The dash panel is fitted with finely made instruments, and you get the feeling that if you own a Triumph for a hundred years, nothing is going to fall off of it. This, unfortunately, can not be said of all our domestic automobiles.

Last year's TR3 sold for $2625; this year's sells for $2675. It would appear there is a price increase, but we don't think so: you get more automobile. The improvements and conveniences that were put on at the factory would cost more than fifty dollars, even the do-it-yourself way. And every one of them is worthwhile.

—Len Griffing

conditions. Within a split second a dog ambled into our path. We stepped on the brakes — hard — and the TR3 stopped *straight* in a distance that seemed no longer that if we had been on dry concrete. It's pretty hard to do better than that.

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NASSAU

(Continued from page 45)

only one pair of Englebert tires which properly matched the rear axle ratio, and he had used them at the rear. Hoping that the slightly larger front tires (which were all he could get) would do for the 250 mile event, he found that they didn't. The car handled poorly and could not attain peak revs. The same was somewhat true of the Gregory car, which had changed axles before this event — erroneously, it was revealed, by the failure of the car to perform up to snuff, even before the differential failed.

By the half-way point of the race, Moss, who had inched out a reasonable lead, stopped for fuel and tires. Shelby passed into first place, and Moss pulled out behind him in second, with Hill a not-too-far-back third. Bonnier, now ahead of Ginther, was fourth. Curtis Turner had held seventh place for a time, but he spun, lost five places, and soon after retired with a broken right-rear spring U-bolt.

Gendebien, going very quickly, led the two-liter cars, immediately followed by the dueling Crawford and Rodriguez who swapped positions five times in six laps, Crawford finally settled into over-all sixth place by the 15th tour. Von Neumann, again driving his older 2.5 Ferrari, had retired after a fine run just behind the leaders (all three of whom had lapped the field at the end of the first hours).

At the mid-point, George Reed's bored-out 4.9 Ferrari was the only Class B car still running; Peter Collins was ahead in a very small Class D field with the till-now well-hidden 2.6 Ferrari-Healey; Chuck Daigh had kept Reventlow's Maserati just ahead of Bob Said and far ahead of the other two-liter cars before he turned it back over to Lance (Gendebien's engine blew up after a few laps of running far up front); the Crawford and Rodriguez Porsches were miles ahead of their nearest class contenders. The four Elvas, with only a single Lotus to beat, had it all their own way. Howard Hanna's D.B. was the lone Class H car still in the field.

Moss got back out front ahead of Shelby — gaining perhaps four seconds a lap. By the 34th tour, the Shelby car developed a malfunctioning clutch. It has been held up unduly when trying to re-enter the fray after a tire change, and Shelby had slipped the clutch in impatience. So Moss pulled ahead a little on each remaining lap. Shelby, a clear second, about a minute ahead of the struggling Hill; Bonnier, driving very smoothly several miles behind, stayed in that order till the end.

Crawford, one of the finest Porsche-drivers in America, inched his RS ahead of the Ginther 4.9 Ferrari and stayed there for 12 laps, gaining slightly on Bonnier until he broke a rear axle five laps before the end; Rodriguez had a malfunctioning gearbox — no syncromesh — throughout this event. He had twice managed to re-pass the Reventlow-driven Cooper during the second hour, but made a late pit stop which permitted Bob Said, now in a very laudable sixth over-all spot, and Reventlow to pass him.

Bruce Kessler, driving Helburn's Testa Rossa Ferrari, had placed it immensely well before turning the wheel back to its owner who followed Rodriguez across the finish line. During the last half-hour, the cars were running in darkness, lights blazing and exhausts snapping. Close to the finish, Rod Carveth's Aston broke a front shock, and missed the last turn before the pit straight. Carveth tore down some 150 yards of steel mesh fencing and, to the utter horror of Maj. Parker and race organizer "Red" Crise, the incident was not noticed by anyone until Carveth walked back to the pits. Fortunately, in spite of serious damage to the car, he was not hurt.

Red Crise now has a permanent installation to work with, so by next year Nassau has every likelihood of becoming one of the finest — it is already one of the fastest — sports-car racing plants around. After the races, Crise, Parker, Bill Smythe and a handful of the drivers went over the course making suggestions for improvements — re-surfacing, narrowing the road, adding flag stations for more complete coverage, etc. Wouldn't be a bit surprised to see Nassau on the F.I.A. Manufacturer's Championship calendar one of these years. It has all potentialities required and couldn't be a pleasanter place to go.

D. M. Bartley

PLYMOUTH FURY

(Continued from page 53)

It also permits, for example, the ascent of a steep grade in top gear at 20 mph with total smoothness and without a trace of lugging. This is particularly notable for a dual four-throat carb engine with the simplest sort of log-type manifold. Among the several factors that go into providing this smoothness and high torque are increased displacement, new combustion chamber design, venturi-shaped intake ports and extremely short, roomy exhaust passages.

This new engine, while in essence "just another Detroit V8," embodies a mass of detail improvements, both in terms of manufacturing efficiency and engineering quality. It is much lighter than its predecessor; fifty pounds are saved in the interchangeable cylinder heads alone. For minimum distortion and maximum sealing, the number of cylinder-head bolts has been increased from ten to seventeen per head, with five bolts spaced symmetrically around each cylinder.

The crankshaft's main and rod journals have been enlarged to give a journal overlap of 13/16 in., and increased main and rod bearing areas of 25 and 28 percent respectively. A torsional vibration damper is fitted and the crank-rod-piston assembly is dynamically balanced. The pistons and their two compression rings are tin coated to prevent scuffing during break-in.

Hydraulic tappets are standard and they operate light, tulip-head valves through tubular steel pushrods and pressed steel rocker arms. The tappets do not pump up until far beyond the 5000 rpm horsepower peak. Both intake and exhaust valves are made of heat resistant high-alloy steels and they rotate automatically, in the interest of lengthened valve life. The newly designed intake manifold is relieved of the secondary function of tappet-chamber cover and is merely an open series of branches without excess cast iron — another weight-saving feature. The tappets can be removed without pulling the intake manifold — typical of a large number of good service features designed into the B engine. The four-throat carbs appear to be greatly simplified and greatly improved over those on the '57 Fury, which were known to fail to furnish fuel on sharp curves and steep grades.

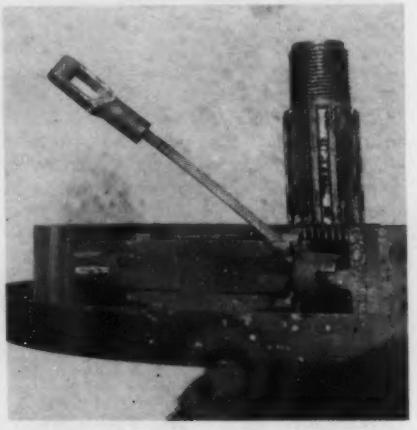
The '58 Fury's manual shift transmission is smoother in its operation than that of the '57. It's still on the heavy side, though, and requires prior engagement of a synchronized gear if clashing is to be avoided on engagement of low or reverse. But its crossover (fore and aft motion in the neutral position) and up and down shifts between second and high are smoother. This transmission has undergone two re-designs dictated by increasingly powerful engines. In the course of making the gear teeth huskier, low's ratio has gone from 2.58 to 2.50 to 2.33, and second's from 1.83 to 1.68 to 1.55. In the '58 Fury with 3.73 axle gears it is possible to wind out to 54 mph in low and 85 in second.

Rear axles for the Fury have undergone a similar beefing-up, with the result that the choice of optional final drive

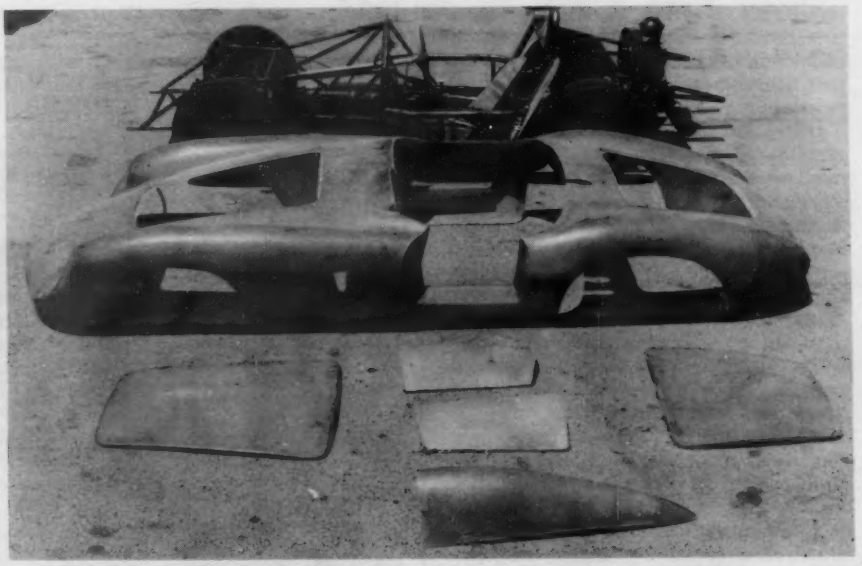
(Continued on page 63)

BODY FOR A BEETLE

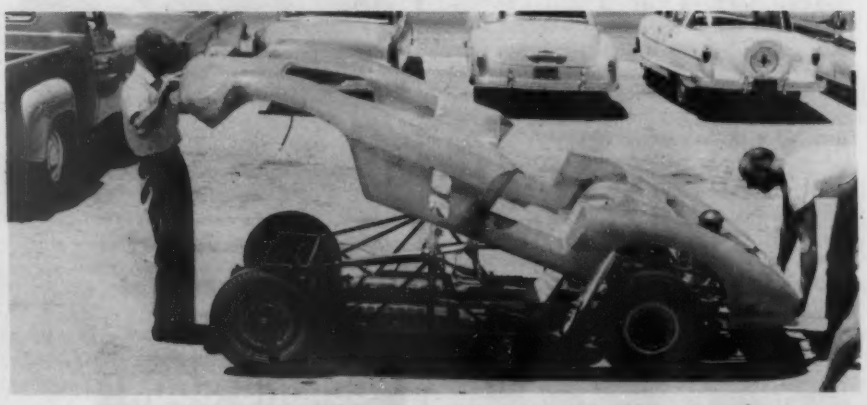
(Continued from page 47)



Hand brake cables are shortened by cutting cable, then gently rebrazing clevis to it. Carburetor controls are easily shortened with wire cutters. Clutch, brake pedal arms may need lengthening due to lower seating position.



Now the chassis is in running order and we can relax for a moment to admire the attractive lines of the Devin shell. Kit includes all panels shown at $295, for another $200 you can get a dashboard and a windshield.



Ted Buckland lowers the tail in place while a friend lends hand up front. Nose support should be installed through trunk lid after body is in place.

(Continued on page 65)

PLYMOUTH FURY

(Continued from page 63)

ratios now has dropped to two. They are 3.73 for the stick job and 3.36 for the TorqueFlite torque converter transmission.

Our '58 test Fury was not equipped with optional Constant-Control recirculating-ball power steering, but none of its several robust drivers missed this. Caster action in the test car was extremely strong, perhaps even excessive. This might be due to incorrect caster adjustment although the effect might be due entirely to fixed king pin inclination. The steering is smooth and positive but somewhat heavy and slow.

When you buy merely a Fury you do not get our test car. The basic Plymouth has the 318 inch engine that powered last year's Fury, but with one two-throat carb. The regular '58 Fury comes with the same engine, a camshaft change, a pair of dual four-throats, and heavy duty springs and shocks. The Golden Commando Fury has the H.D. suspension, plus the new 350 inch engine with dual four-barrels.

It is more than an exciting car. It's a kind of car that Detroit has produced few of in the last 20 years. It's a car with a really strong personality. It's a taut feeling vehicle that does not see-saw on rubber-bushed suspension. Yet its ride cannot conceivably be called harsh. It is extremely fast and responsive to the driver's touch. It moves with authority and grace. It is sleek but it has its bestial side. Like the old *kompressor* Mercedes, the engine emits an animal moan when you floor the throttle. But its built-in fury is entirely on the driver's side; it has no sneaky little vices that appear when the chips are down, aside from its brakes.

As for sheer *go*, it far outstrips the already hot '57 Fury.

Griff Borgeson

SUPERSPORTS

(Continued from page 18)

Taylor's advice could have been well heeded, as it turned out. The difference in one-off and production is considerable, and is compounded by the fact that problems involved in powerplant manufacture are not the same as other consumer items of a less durable nature.

Controlled-atmosphere brazing (the proper term for the process) of steel parts to replace castings, die castings and manually welded parts dates from about 1929, when General Electric went into hydrogen-electric oven research. Since that time, fabrications weighing from fractions of an ounce to 400 pounds have been fused at the 2000°F temperature. A variety of useful gadgets is included in this list . . . from freon-filled bug bombs to end plates of Oerlikon cannon and jet turbine parts. And the brazing technique, when applied to engine blocks, is advantageous in respects other than weight-saving, as we shall see.

(Continued on page 64)

SUPERSPORTS

(Continued from page 62)

When steel stampings to be bonded together are placed in the oven (which is not necessarily electrically heated, any method can be used as long as the air is excluded and hydrogen is introduced), copper, in paste or wire worm, is placed in and near the joints. The clean, hot steel is reduced by the hydrogen and an attraction for the copper is set up which results in a copper-steel compound bridging the seams. Capillary action causes the copper to flow into the most minute crevices and, in some instances, vertically as high as 2 feet . . . in defiance of gravity. Photomicrographs of such welds shows that there is a true amalgamation and the seams are stronger than plain copper itself. In using this method any ferrous materials can be joined together. This means that valve seats of the hardest tool steel can be bonded into the block . . . an advantage denied the ordinary cast block. Steel tubing of the proper hardness for long wearing cylinders can be joined to the less expensive sheet stock suitable for water jacketing, while still another grade can be formed into heads and valve guides.

These considerations, and the desire to produce a perfected engine of great strength, impelled Lloyd Taylor to continue experimentation after Crosley had put his initial design into production. As the Crosley plans for a small car materialized, it became apparent to Lloyd that when mass-production techniques were applied to the 44 cubic inch mill, and cost cutting principles were favored over sheer quality, that something was bound to go wrong. He harbors no grudges at this date, but Taylor feels that the big business approach, successful as it has made our country, still has its blind spots, and that one of them is the frantic endeavor to be first with the latest for the least money.

In the unique set up of the Crosley stampings, as they were originally plotted, several pieces were laid out to be stretch-formed in three operations. The first die roughed out the blank, and succeeding presses completed a precision part. This was particularly vital around the valve guides where a radiused corner called for uniform thickness to provide uniform heat dissipation. The economy axe fell on this and other idealistic tooling specifications, and the engine design went to bed considerably altered from the original conception. Compound dies replaced multi-stage parts production.

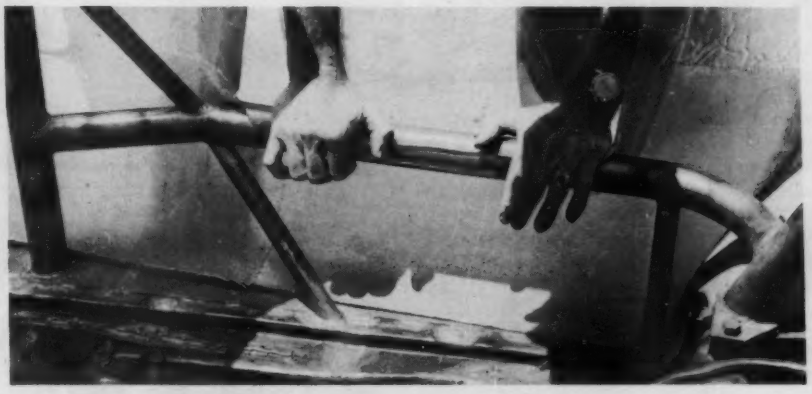
Those who were actively interested in the Crosley at the time it appeared on the market well remember the "tin engine" and its problems of maintenance. There were many flaws in the stout little OHC 4 . . . not the least of which was maintaining gear clearances in the cam drive — a bevel gear and shaft arrangement working off the front of the crank.

In Taylor's opinion the thrust should have been taken by a bearing at the front main. But this posed assembly problems and a switch was made to a rear-thrust arrangement. As the engine heated up to normal operating temperature and cooled again it expanded lengthwise and caused the gear clearances to grow and diminish alternately.

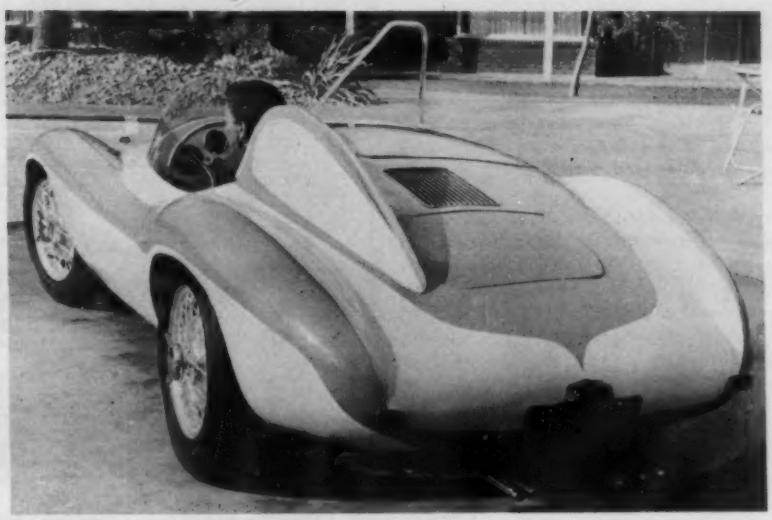
(Continued on page 66)

BODY FOR A BEETLE

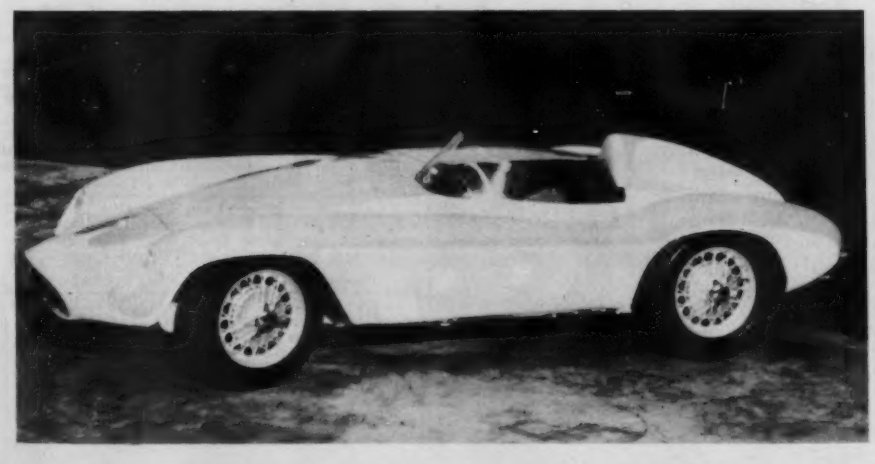
(Continued from page 62)



Door sills are laminated to cockpit stringers. Lower edge of body must be bolted to sheet metal floor panels. Waterproof the joints with resin.



Finished Beetle (not Ted's) features Dayton wire wheels, filled in front fender holes, rigid tonneau cover, and modified engine cover using Porsche grille for air intake. Last major step is to chop 2½ inches from top of cooling shroud. Shorten oil cooler, too, and remove shroud's internal baffles.



INDEX OF ADVERTISERS

Sports Cars Illustrated
March, 1958

ADVERTISER	PAGE NO.
Accessory Engineering	57
Allen, Don	60
American Oil Company	3
Arnolt, Inc. S. H.	52
Art Center School	64
Auto Books	9
Auto Marine Corporation	62
Bentley, Inc., Robert	6, 11, 14
Brigham-St. John, Inc.	65
British Auto Parts	8
Chevrolet Division of General Motors	5
Citroen Cars Corporation	59
Columbia Motor Corp.	56
Competition Accessories	54
Contemporary Motors & Accessories	62
Continental Tags	64
Custom Sport Car Accessories by Cy	64
Devin Enterprises	12
Dietz Engineering Co., O.W.	52
Edith's Terry Covers	64
Fisher Products	7
Foreign Auto Parts Company	63
Gordon & Co., Inc., R.	64
Haan, Vilem B.	10, 64
Hambro Automotive Corporation	4th Cover
Heath Company	53
Hi-Fi Guide & Yearbook	61
Iskenderian, Ed.	56
Judson Research & Mfg. Co.	49
Lucas Electrical Services, Inc.	57
Macfarlane Industries	62
Mitten, MG	51
Ossie & Reg	64
Plasticon, Inc.	58
Polk's Model Craft Hobbies	52
Porsche	63
Post Motor Books	58
Ramcote Products	64
Remco Accessories	64
Riverside Records	15
Royze, Inc.	65
Sherman Way Auto Wreckers	64
Simca, Inc.	3rd Cover
Standard-Triumph Motor Co., Inc.	2nd Cover
Stevens Engineering Co.	52
Stevens Plastics	60
Studebaker-Packard Corp.	13
Stylized Emblem Company	63
Toptex, Inc.	63
VDO Instruments	50
Volvo Distributing, Inc.	55
Wilco	64

SUPERSPORTS

(Continued from page 64)

Much of the rattle-and-roll noise attributed to the tin block was in reality an improperly meshing gear train.

Refrigerator assembly experience apparently wasn't too sound a background for quality control in engine manufacture, and many Crosley blocks emerged with tiny unwelded spaces in the seams. While this may not be of great importance to the performance of household appliance, it proved to be deadly where the continuous vibrations and stresses of power output were encountered. According to those in the Crosley organization at the time, the leakage was not recognized as primarily a tooling boner. When it was finally admitted, so much money had been sunk into the project that a final mistake was added in an effort to salvage all the former ones.

This almost incomprehensible move was to *galvanize* the block to seal the leaks!

As any first-year chemistry student could have told the project engineers, plating zinc onto a copper-steel unit and filling it with water containing even the slightest mineral traces would result in an inefficient but nonetheless active *battery*.

The denouncement was as might have been expected. The "tin block" began to devour itself through electrolysis and literally ate itself up before it got underway. When this manifested itself, the switch was made to a cast block, and considerable disparagement was heaped upon the fabricated unit.

We all know the cast-block Crosley as one of the most spectacular engines of our time. And, Lloyd Taylor's radical design, (five mains, OHC, over-square) even though much aborted, is sound and respected by anyone who has worked on the little devils. Nick Braje, and others, have coaxed fantastic amounts of hp from Crosleys in spite of the inferior breathing (changed from Taylor's original 4-port arrangement) and difficult valve timing.

At a certain point in the Crosley revisions, Lloyd threw in the towel and went home a most unhappy man. Although his connection with Crosley was ended, he continued to work further with the engines at O'Keefe & Merrit in Los Angeles to develop a portable generating unit that is still being bought by the Government . . . the same generators which power our Radar defense line from the Arctic south. During this period Lloyd began to think about the fabricated block again and planned ahead, convinced that this method offered the only economical approach

In his analysis these improvements were needed: lighter weight, higher compression ratio (for more power), more efficient heat transfer (for lower internal temperatures and longer life), overhead cam arrangement (for better breathing) and a barrel crankcase for the ultimate in bottom-end sturdiness.

He was so convinced that his fabrication principle was the answer to these requirements that he spent the next ten years — plus a man-sized fortune — to prove it. The SS two-litre is the result.

Ocee Ritch

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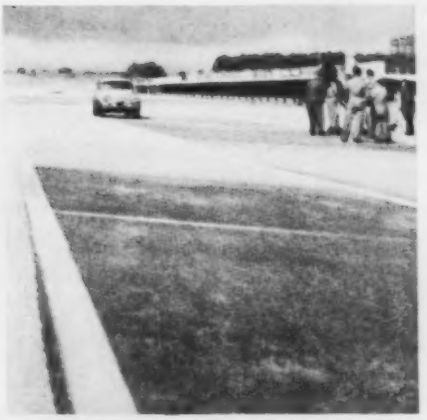

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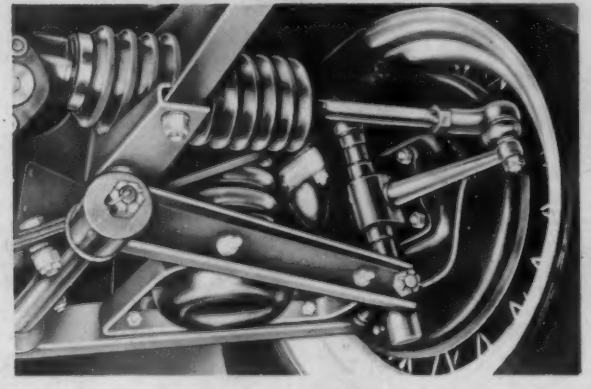

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